COTTON

Volume LXXX
Number Five
Ten Cents a Copy

MARCH, 1916

Published Monthly by
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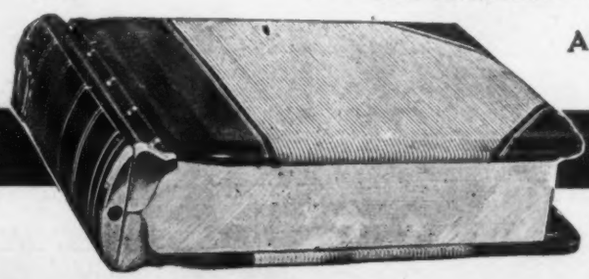

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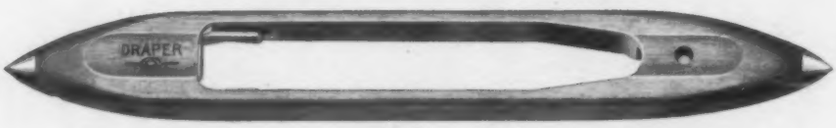

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L. L. ARNOLD, Editor.

Editorial and Advertising Departments Grant Building, Atlanta, Ga. Subscription price, $1.00 for two years; Canada, $1.00 a year; Foreign, $1.50 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the 10th of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

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Volume 80. **Member Audit Bureau of Circulation.** **Number 5**

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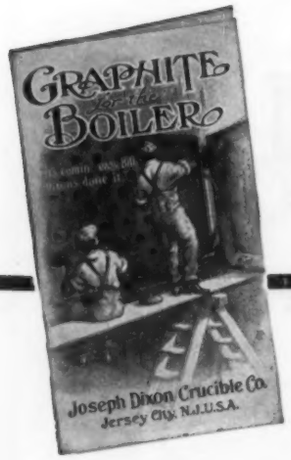

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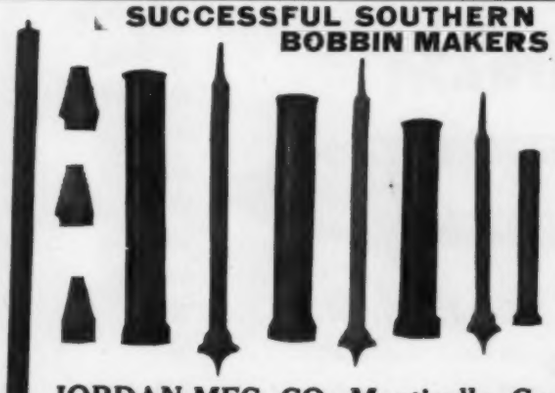

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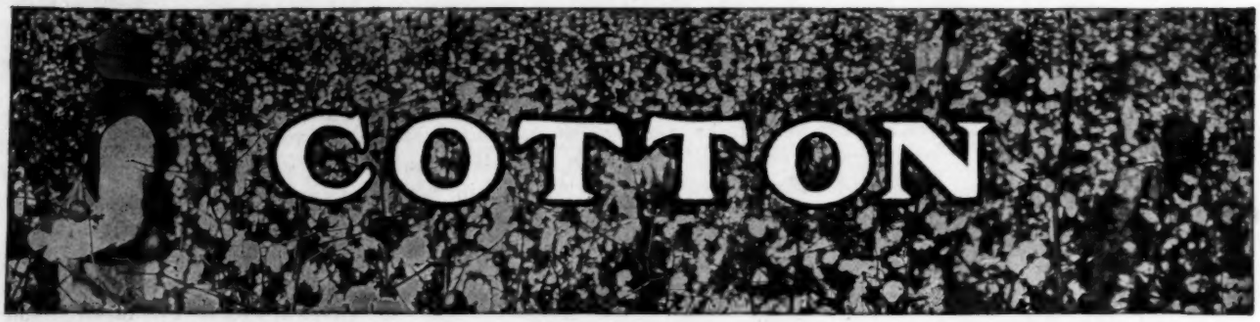


March, Nineteen Sixteen.

Japan and the United States.

In August, 1912, we stated in these columns that "The white races seem almost too secure in their commercial supremacy and it is no fiction to predict that the time may come, and more quickly than we now think, when the Mongolian, with his marvelous powers of imitation, may even equal the Caucasian despite the much vaunted initiative of the latter. * * *" Some of the figures submitted by Ralph M. Odell in this issue seem to bear out the statement. But the Japanese are forging ahead in other directions.

While the textile manufacturers of this country are meeting in Washington and earnestly beseeching their national representatives to take *some action* toward protecting an *American* dyestuff industry, the Japanese Government has completed full details of a plan to encourage the manufacture of dyes and chemicals in that country. The British Commercial Attache at Yokohama reports that subsidies will be granted under the following regulations:

The Japanese Government will pay three subsidies; one, to a company specializing in the manufacture of dyestuffs whose capital is at least 6,000,000 yen; the second, to a company manufacturing glycerine and carbolic acid, whose capital is at least 1,200,000 yen; and the third to a company manufacturing drugs, whose capital must be at least 500,000 yen.

Anyone who desires to organize a subsidized company for the manufacture of dyestuffs and chemicals must apply to the Minister of Agriculture and Commerce for permission to establish the projected concern; but in the case of drugs, permission should be sought from the Minister for Home Affairs. When part of the capital is paid up, the first general meeting of the shareholders completed, and the new company duly registered in the courts, the promoters of the company are entitled to ask for a subsidy

The Government guarantees to each company a dividend of 8 per cent per annum, making up any deficit. Each company must lay aside one-twentieth of its net annual profits as a reserve fund. If its shares are issued above par the premium must be included in the reserve fund.

A special reserve fund is also to be provided in order that the company may become self-supporting as soon as possible, and to this fund will go one-half of the excess net profits after the dividend of 8 per cent per annum has been paid. The balance of the excess may be distributed amongst the shareholders, the maximum dividend from this source not exceeding 4 per cent per annum; the residue will be included in the special reserve fund. The conduct of the subsidized companies will be under the strict surveillance of the Government

The products provided for under this law are acetanilide, benzoic acid, carbolic acid, salicylic acid, antipyrin, bromine, hydrate of chloral, chloroform, eresol, formalin, glycerine, guaiacol, caustic potash, potassium carbonate, creosote, alkaloids; and chemical compounds and derivatives of the foregoing.

The by-products obtained from coal by dry distillation process are light oil and neutral oil, crude and refined benzol, toluol xylol, carbolic acid, napthalin, and anthracine.

This attache also reports, with reference to the proposed establishment by the Japanese Government of a company for the manufacture of dye-stuffs, that it has now been arranged that the proposed company will be formed with a capital of 8,000,000 yen. The first factory will be built in Tokio or Osaka, or in the north of Kiushiu (probably close to the Wakamatsu ironworks, whence the necessary benzol will be obtained.

A Foreman Should Lead, Not Drive.

An overseer of a Kentucky mill in a letter to the Practical Discussion Department has objected to being called a "Boss." He likes neither the term nor the implication which it carries with it.

In this he is right, as the qualifications that cause one man to be given any measure of authority over some of his fellows are not only the essentials of the man's own advancement, but they exercise an important influence on the development of those under him.

Charles Henry Mackintosh has written an interesting essay on this question of the art of managing men, in the January number of his magazine, Logging. He illustrates it with an actual dialogue between a swash-buckling, swearing foreman and one of the men working under him. This was one of those foremen who never give a reason for an order at the time they give the order, because they do not consider that the men under them have sense enough *to* reason. The entire essay is worth reading but is too long to reproduce. However, it brings out very forcibly the salient fact that the effect of the actions of a foreman of this character is reflected in the quality of the work produced by the factory.

Quality in the finished product is the difference between work done with the aid of brains and work done without. Work done with the aid of brains means that every operative is trained to think and reason while at work. It becomes an effort to do in the best possible manner each individual process in the great romance of industry. It produces a contented employee who is working to attain a better product, instead of a sullen operative with one eye on the clock waiting for quitting time.

It is true that the foreman may *seem* to waste time. It may take longer to give reasons than to give orders, but the results will appear at once in the mental attitude of the operatives toward the foreman and toward the job, and will be reflected in the quantity and quality of the work produced.

They should be made to think of their jobs as a necessary part in a great industry, instead of a meaningless and monotonous repetition of fatiguing motions, only necessary because they must do something in order to live.

If this reason-for-orders spirit begins at the top, as it should, all participants will look upon the foreman, the superintendent and the higher officials as co-workers in social service; and without being envious of the greater reward which they receive for greater knowledge, will instinctively become understudies of the man next above.

Most superintendents and overseers appreciate this mental attitude on the part of the men under them and act accordingly. Those who are so unfortunate as not to understand human nature do not deserve the positions they occupy and will not long remain in them.

The man at the top may feel that he is not concerned in the manner in which his foremen get results, as long as the results are visible. This is a mistaken attitude. He not only *should* care but *must* care. Moreover, he should remember that he is the "big smoke" and no one is going to remind him of his own shortcomings. He should, therefore, practice introspection.

If you be one of these, visualize your acquaintances and their attitude toward those who should be working *with* them instead of *for* them. This method is suggested because it is much easier to take a broad view of the other fellow. After securing the proper viewpoint, compare the results with your own actions under similar circumstances. Remember that industry must have its managers and its operatives, but it needs neither bosses nor slaves.

The manager who leads will have a loyal and efficient following. They will be fair because he is fair. They will respect him because he respects them. They will do their best for him because they know that he is at all times doing his best for them.

The wise foreman, no matter what his nominal title in the industry with which he is connected, regardless of the number or type of operatives under his authority, without considering whether his instructions are given directly or are handed along the line from one under-foreman to other under foremen, knows that to attain success he must teach those under him how to reason, how to use their brains to the advantage of themselves and the industry. Such a man is a leader. He is always at the head of his men. Also, when opportunity comes along he is usually the man selected, because everyone realizes that he possesses the necessary ability to lead his following over every obstacle.

American Cotton Goods in China.

There is a splendid opportunity at present to increase the sales of the better grades of American cotton goods in China. This is the final opinion of Special Agent Ralph M. Odell, who has spent six months in China investigating the market for cotton goods for the Bureau of Foreign and Domestic Commerce, of the Department of Commerce. Of late years the Japanese and Chinese mills have made a strong bid for the trade in cheap cotton and competition in that line is much more severe than in the better grades. Chinese imports of piece goods total about $75,000,000 a year, and the American share of this has, for the last five years, been maintained at between five and six million dollars, which is somewhat below our share in previous years.

The war in Europe, according to Mr. Odell, has curtailed the purchasing power of the Chinese people, but it has also restricted the exports of cotton goods from the principal European source. Stocks throughout the country are gradually diminishing, and it is likely that there will be an actual shortage in the near future. If full advantage is taken of the present opportunity by American manufacturers who are willing to find out just what the market wants and then supply it, it is probable that American cotton goods will regain the position they once held. "In spite of the pessimistic views of some of those who have watched the rapid decline in our trade in sheetings and drills in Manchuria, there are excellent grounds for the belief that American ingenuity and modern methods of manufacture will yet make it possible for the United States, the second largest producer of cotton goods in the world, to secure an appreciable share of the trade in this large and expanding market if we will avail ourselves of the opportunities which await us and which have been partly created by the present world-wide conditions."

In normal times China is the largest market in the world for cotton yarns and the second largest for cotton piece goods. The value of the yarn brought into the country averages about $45,000,000 annually and of piece goods about $75,000,000, and it is estimated that the domestic production of piece goods equals the quantity imported, so that the total consumption of cotton piece goods may be stated at $150,000,000. Ten years ago American cotton goods had a large sale in China; in fact, China was the largest foreign market for such goods. Some ground has been lost, however, by reason of competition from Japanese and, very recently, from Chinese mills, as indicated by Mr. Odell in this number of COTTON.

The necessity for a thorough understanding of the situation led the Bureau of Foreign and Domestic Commerce to send Special Agent Odell to make an investigation on the ground, along the same lines that the Bureau has followed in studying the cotton-goods markets in practically every country in the world. The results of the investigation are set forth by him elsewhere in this number. Those manufacturers desiring a more technical and exhaustive report than that contained herein, are referred to the 241-page monograph entitled "Cotton Goods in China," which is published by the Bureau as Special Agents' Series No. 107.

The Advertising Contest.

The winner of the advertising contest prize for January, 1916, is Albert J. Owler, overseer of carding at the Nottingham Mill, Providence, R. I. The winning letter follows:

The Prize Winning Letter.

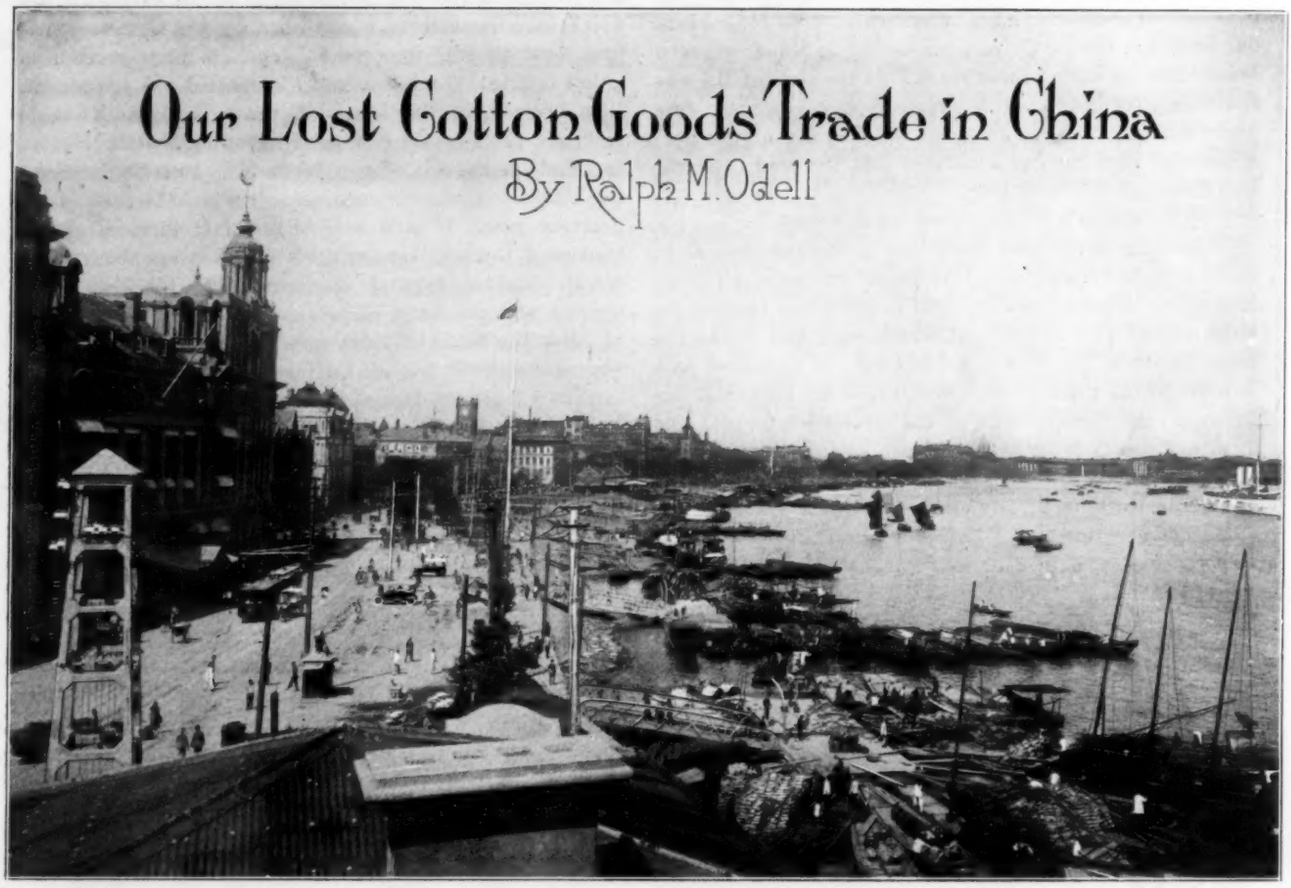
Contest Department of COTTON:

I think the advertisement of the Georgia Railway & Power Co., the best in the January issue of COTTON, for the following reasons:

(Continued on page 242.)

Our Lost Cotton Goods Trade in China

By Ralph M. Odell



A VIEW OF THE BUND IN SHANGHAI, SHOWING THE ACTIVITY ON THE WHARVES AND THE TYPE OF OFFICE BUILDINGS IN THIS LARGE ORIENTAL CITY. THE WHITE SHIP IN THE HARBOR IS AN AMERICAN GUNBOAT WHICH CRUISES UP AND DOWN THE YANGTZE RIVER.

The rapid decline that has taken place in our shipments of cotton goods to China presents one of the most serious problems which the American cotton manufacturing industry, particularly in the Southern States, is facing today. At a time when the output of English and Continental mills is being greatly curtailed, their costs of production are rising rapidly and the world is beginning to look more and more to the United States for its supply of material for clothing, our exports of cotton cloth to China and Honkkong have continued to grow smaller until in the calendar year 1914 they amounted to only 39,706,530 yards valued at $2,832,151 as compared with 110,163,246 yards valued at $7,567,334 in the calendar year 1911, 69,766,738 yards valued at $4,620,276 in 1912 and 118,258,030 yards valued at $8,280,416 in 1913. During all the years previous to 1914 this large market in the East with its population of nearly 400,000,000 had been by far the principal foreign outlet for American cotton goods; in that year, however, the Philippine Islands, where competition is not open owing to the fact that American goods are admitted free whereas goods from other countries are subject to a high tariff, took first place in the trade. The statistics for 1915 will, from all present indications, show that Canada, Central America, the West Indies and South America have also outranked China as markets for American cloth and that our shipments to the latter country have fallen to a place of minor importance in our cotton goods export trade.

Here is a table giving the exports of cotton cloth to China and Hongkong from the United States, which very graphically shows the story of the loss of our trade in China:

Calendar Year	Yards	Dollars
1905	563,188,396	33,577,865
1906	271,767,603	16,779,844
1907	39,138,996	2,774,596
1908	80,083,218	4,603,422
1909	155,959,635	9,216,809
1910	65,817,777	4,192,641
1911	110,163,246	7,567,330
1912	69,766,738	4,620,276
1913	118,258,030	8,280,416
1914	39,706,530	2,832,151

In the fiscal year ending June 30, 1915, our exports of cloth to China and Hongkong were only 17,231,178 yards valued at $1,225,101 as compared with 89,975,350 yards valued at 6,220,778 in the fiscal year 1914.

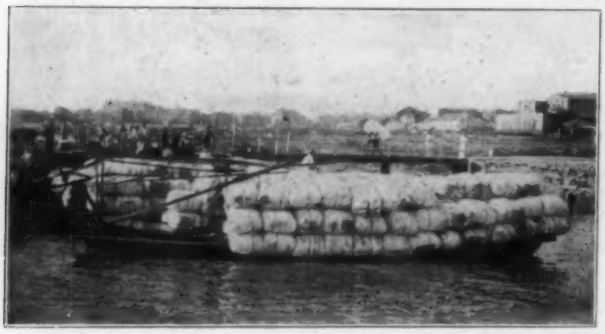
For purposes of comparison the years 1905, 1906, 1907 and 1908 should be eliminated because the enormous volume of exports in 1905 and 1906 was due to extraordinary con-

*Commercial agent, United States Department of Commerce.

ditions brought on by the Russo-Japanese war and the consequent demand for large quantities of cloth for soldiers and tents and for the Chinese population in Manchuria who bought heavily during those years. At the close of the war the dealers found themselves largely overstocked, there were many financial failures owing to the inability of the purchasers to pay for goods ordered and the trade suffered badly during 1907 and 1908.

CHINA'S HUGE COTTON GOODS TRADE.

Beginning with 1909 there was a distinct revival in trade and the imports of cotton manufactures of all kinds into China increased rapidly until in 1913 they reached the huge sum of $133,165,887 (of which, yarn and thread imports amounted in value to $52,951,849) as compared with imports to the value of only $86,491,567 in 1909, and this increase took place in spite of the revolutions in 1911 and 1912 and the more or less disturbed conditions which have prevailed in the interior since that time. The imports in 1913 exceeded those of any other year in the history of the trade not even excepting the record year, 1905, when the imports amounted to $132,460,656. In the year 1914 the imports fell to $119,433,560 owing to the European war



BAGS OF CHINESE COTTON ON A NATIVE JUNK.

and the consequent loss of important European markets for Chinese products. In view of the world-wide stagnation in trade and the demoralization in shipping and financial circles since the outbreak of the war it must be admitted that the decline in the trade was surprisingly small and much less than might have been expected since China's buying power is very largely dependent on her ability to sell.

The extraordinary decrease in our own shipments to China during 1914 may also be ascribed in some measure to the European war; American cotton goods as a rule are dearer than similar goods from other countries and it is only natural that they should suffer and that the people should turn to cheaper goods when times are bad and money is scarce. But the explanation of the loss of our trade goes deeper than the question of temporary conditions and it would have taken place, perhaps to a less marked extent, if there had been no upheaval in world-wide trade. The chief factor in the displacement of American cotton goods in China has been, and still is, Japanese competition. In a thorough and exhaustive report published a little more than a year ago and which many Southern cotton manufacturers have doubtless read with deep interest, Commercial Agent W. A. Graham Clark of the Bureau of Foreign and Domestic Commerce traced the rise and progress of the Japanese cotton industry and the remarkable expansion in that country's cotton goods trade which has been a development almost unparalleled in the world's history. It is a significant fact that according to preliminary statistics which have recently been published by the Chinese Maritime Customs, the imports of Japanese grey goods into China during 1914 considerably surpassed the imports in 1913 in spite of the European war and its unfavorable economic effect on the purchasing country and the further fact that the imports of grey goods from both England and the United States were very much less in 1914 than in the previous year. It is a well known fact to most of the readers of COTTON that our trade in China has always been largely confined to grey sheetings (which in the lighter weights are sometimes classed as "shirtings") and drills; in 1914, for example, these two kinds of cloth constituted approximately 90 per cent of the total cotton piece goods imported from the United States.

The following table gives the imports, in pieces, of grey sheetings, shirtings and drills into China from the three principal sources of supply during recent years (sheetings and drills are 40 yards and shirtings 38-39 yards per piece):

Imported from	1909 pieces	1911 pieces	1912 pieces	1913 pieces	1914* pieces	January to March 1915 pieces
England:						
Grey shirtings	3,867,304	4,184,870	2,701,470	3,527,455	3,405,285	813,990
Grey sheetings	325,514	165,080	76,748	127,510	192,357	50,820
Grey drills	107,314	42,063	27,580	44,894	45,671	17 106
Total:	4,300,132	4,392,013	2,805,798	3,699,859	3,643,313	881,916
Japan:						
Grey shirtings	119,888	11,484	33,833	95,227	243,826	44,980
Grey sheetings	531,592	1,616,030	1,928,763	3,356,011	4,449,433	2,504,466
Grey drills	598,975	1,012,735	827,037	1,666,757	2,190,155	2,704,466
Total	1,250,455	2,640,259	2,889,633	5,117,995	6,933,414	5,253,912
United States:						
Grey shirtings	61,415	59,586	6,015	45,725	3,172	175,936
Grey sheetings	2,453,345	1,384,731	1,404,713	1,559,255	870,200	217,448
Gray drills	981,423	499,159	454,320	507,138	145,719	41,584
Total:	3,496,183	1,943,476	1,865,048	2,112,118	1,019,091	434,968

*The figures in the table covering the year 1914 are taken from the Abstract of Statistics published by the Chinese Maritime Customs and those for the first quarter of 1915 are from the Quarterly report; both are only preliminary and they include imports of foreign goods from Hongkong. The statistics for the years 1909, 1911, 1912, 1913 are from the Analysis of Trade showing the imports in detail by countries; they do not include imports from Hongkong but only those which are actually credited to England, Japan and the United States. The imports from Hongkong (which undoubtedly refer mainly to English goods) in 1909, 1911, 1912 and 1913 were as follows:

	1909 pieces	1911 pieces	1912 pieces	1913 pieces
Grey shirtings	584,816	470,924	424,324	480,352
Grey sheetings	4,060	16	461	20
Grey drills	35,506	32,087	51,472	41,407
	624,376	503,027	476,197	521,779

Grey shirtings credited to the United States do not refer to the goods technically known as "grey shirtings" but to light weight grey sheetings.

Comments on this table to emphasize the deplorable condition of our cotton goods trade in China at the present time are hardly necessary but it should be noted in passing that whereas the imports from the United States in 1914 were less than one-third as much as they were in 1909, the imports from Japan increased nearly six fold during the same period. If any further evidence be needed it is to be found in the statistics of the imports into Shanghai during the nine months ending September 30, 1915, as shown in the reports of Noel Murray & Co., of Shanghai. According to these figures the imports of grey sheetings from the United States were only 139,480 in the period mentioned as compared with 406,520 pieces during the first three quarters of 1914; not a single piece of drills is credited to the United States, whereas 46,920 pieces were imported during the corresponding period in 1914. The imports of Japanese grey sheetings at Shanghai up to October 1, 1915, are stated to have been 92,880 pieces as compared with 43,500 pieces in the first three quarters of 1914; during the same periods the imports of Japanese drills declined from 144,786 pieces to 110,810 pieces, but this decrease was due partly to the fact that most of the Japanese drills as well as sheetings

are shipped direct to Manchuria and Northern China where the great bulk of them are consumed, and therefore do not enter the port of Shanghai; partly to the increasing competition of drills made in the Chinese cotton mills in and around Shanghai, which go mostly to Central China and the Yangtze Valley; partly to the boycott of Japanese goods which was inaugurated in the spring of 1915; and partly to the more extensive use of grey jeans as a substitute for drills.

The facts and tables which have been presented are amply sufficient to demonstrate that Japan has captured the greater part of our cotton goods trade in China and that the belief that the chief cause of our loss of this business which was once of primary importance and value to our Southern cotton manufacturers lies in the disordered internal conditions in China incident to the European war is wholly incorrect; if this were the case Japan's trade would also have been adversely affected. Manufacturers who are looking forward to an appreciable demand for American grey sheetings and drills in China and are continuing to accumulate goods against that expected demand when the war is over and normal conditions are restored are doomed to disappointment. This conclusion has only been reached after a close observation and study of the trade on the ground during the past year. "American piece goods finished" is the way many of the large Chinese dealers expressed it to me in their characteristic "pidgin English" and they even adhered to this assertion at the time of the Japanese boycott when it was almost a case of "losing face" for a Chinaman to purchase any Japanese goods.

AMERICAN COTTON PIECE GOODS ON A NATIVE BOAT IN TRANSIT TO THE INTERIOR OF CHINA.

REASONS FOR JAPAN'S SUCCESS.

Much has been written regarding the methods employed by the Japanese in capturing trade in China. Many of those methods, such as the rather general imitation of American brands, preferential rates on railways and steamship lines in the North and alleged unfair practices in the valuation of goods or the collection of customs duties in Manchuria, are seriously open for question while others as, for example, the extension of long terms of credit, a system of barter by which native produce is taken in exchange for cotton goods, selling goods below cost to get them on the market, the carrying of large stocks in numerous important commercial centers from which immediate deliveries can be made and the policy, sometimes, of putting up a piece of cloth with one yard over the nominal yardage in order to introduce or popularize a brand are not such as to commend themselves, on economic or other grounds, to the conservative business man, manufacturer or importer in the United States. Undoubtedly these methods which have been set forth so clearly in the report of Mr. Clark previously mentioned, have played a large part in the rapid expansion of Japanese cotton goods trade in China and Manchuria. It should always be remembered that Japan looks to China as its natural and richest field for commercial development and that the Japanese cotton industry is far more dependent on foreign trade than is true of the American industry. Whereas our exports of all kinds of cotton manufactures represent less than 10 per cent of our total production, Japan ships to foreign countries more than one-third of all the cotton yarn, cloth and miscellaneous manufactures which her mills produce.

LOW COST OF JAPANESE GREY GOODS.

It is extremely doubtful, however, whether through the adoption of similar methods, if such a thing were possible or practicable, we could regain our lost trade in sheeting and drills in China. Our methods of distributing goods in this market, our failure to cultivate the trade carefully and to provide facilities as nearly as possible equal to those of our competitors are probably open to severe criticism but the outstanding difficulty which we have to face, as anyone who makes a thorough study of the situation must agree, is one of manufacturing rather than distribution. Our sheetings and drills are simply too dear for the Chinese buyer of small means, as compared with the price of Japanese goods of nearly similar weight and construction. It is true that the quality of our goods is superior, that they

are made of better cotton and that the warp carries much less sizing but anyone who has examined the sheetings and drills which Japan is selling in China must admit that the difference in quality is not proportionate to the difference in cost. When I was in China in August, 1915, one of the best grades of Japanese sheetings, 36 inches wide, 44/44 picks and weighing 3.00 yards per pound was selling at 3.40 Shanghai Taels ($1.85) per piece of 40 yards, which figures only 4.62 cents per yard; at the same time American "Enterprise A" brand of 3.00 yard sheeting could not be bought for less than 4.57½ Shanghai Taels ($2.47) per piece, or 6.17 cents per yard. "Loray A" 3.00 yard sheeting, which is one of the best known American "chops" or brands in China was 4.75 Shanghai Taels ($2.56½) per piece or 6.41 cents per yard. In other words the Chinese dealer or consumer could purchase four pieces or 160 yards of Japanese sheeting for the price of three pieces or 120 yards of the cheapest American sheeting of the same weight and still have a few cents in change coming to him. It is rather difficult to convince the great mass of poor natives in the interior on whom the bulk of the trade depends and whose daily earnings are seldom more than five or ten cents per day, that the American cloth is worth the difference in price, particularly since the Japanese sheeting presents a good appearance, is sold on liberal terms and not infrequently in exchange for the native's own produce. There is almost as great a disparity in the price of drills. For example, the "Dragon Brand" of Japanese 30-inch 2.85 yard drill was selling at 4.55 Shanghai Taels ($2.46) per piece of 40 yards or 6.15 cents per yard as compared with 5.50 Shanghai Taels ($2.97) per piece, the price of American "Pacolet" 2.85 yard drills and 5.85 Shanghai Taels ($3.16) per piece or 7.90 cents per yard for the "Pepperell" brand of the same goods. After all has been said in favor of improved and more economical methods of selling American sheetings and drills in China, the fact remains that it is the lower cost of the Japanese goods, amounting in most cases to 25 or 30 per cent less than the cost of American goods of similar weight, which has increased the demand for them at the expense of our own trade.

PROGRESS OF COTTON MANUFACTURING IN CHINA.

In the past few years the sheetings and drills manufactured in Chinese mills have also begun to figure prominently in the trade. These goods are generally made of a lower grade of cotton (Chinese or Indian) than is used in Japanese mills and the weaving on the whole is not so good but they are less heavily sized and for wearing quality the Chinese generally prefer them to Japanese goods. They usually cost a little more than the latter and that was particularly true during the spring and summer of 1915 when the Japanese were offering their goods at very low prices on account of the boycott that was being instituted against them. The Chinese cotton manufacturing industry is only in its infancy but it has made rapid progress in recent years and bids fair to play a more and more important part in the trade of the country. No complete statistics on the industry have ever been collected but at the time of my visit last year there were about 1,000,000 spindles and 5,000 looms in operation. From these figures it may be seen that the mills are more concerned with the production of yarn for the market than cloth, but the weaving branch of the industry is growing rapidly. In 1914 88,302,266 pounds of yarn, 517,945 pieces of sheetings and 214,910 pieces of drills made in Chinese mills were exported from Shanghai, which is the center of the industry, through the Maritime Customs to other parts of China. These figures compare with exports in 1910 of only 36,490,533 pounds of yarn, 249,453 pieces of sheetings and 85 pieces of drills.

COMPARATIVE PRICES OF CHINESE, JAPANESE AND AMERICAN GREY GOODS.

The following table shows the prices of some of the leading brands of Chinese, Japanese and American sheetings and drills which were ruling in Shanghai in August, 1915 (The value of the Shanghai Tael in August, 1915, was $0.54):

Grey sheetings 36 inches wide, 40 yards per piece:

Brand	Picks per inch	Lbs per piece	Yds. per lb.	Shanghai taels per piece	Dollars per piece	Cents per yard
Chinese						
Three Fish	48/48	12	3.33	3.50	1.89	4.72
Bull's Head	48/48	13	3.07	3.85	2.08	5.20
Three Horses	48/48	13	3.07	3.85	2.08	5.20
Two Horses	48/52	13 1-3	3.00	3.90	2.11	5.22
Lion	48/48	14	2.85	4.25	2.30	5.75
Three Horse Head	52/52	14 1-2	2.75	4.50	2.43	6.07
Dog	48/48	15	2.66	4.50	2.43	6.07
Nine characters	48/48	16	2.50	4.90	2.65	6.62
Japanese:						
Dragon C.	44/44	13 1-3	3.00	3.35	1.81	4.52
Nine Dragons	44/44	13 1-3	3.00	3.40	1.85	4.62
American:						
Piedmont L. L.	48/48		5.00	3.00	1.62	4.05
Piedmont X. X.	48/52		4.70	3.15	1.70	4.25
Buffalo L. L.	48/48		4.00	3.35	1.81	4.52
Buffalo A.	48/48		3.25	4.10	2.21	5.52
Enterprise A.	48/48		3.00	4.57½	2.47	6.17
Loray A.	48/48		3.00	4.75	2.56½	6.41
Buck's Head	48/48		2.85	5.25	2.83½	7.08

Grey Drills 30 inches wide, 40 yards per piece:

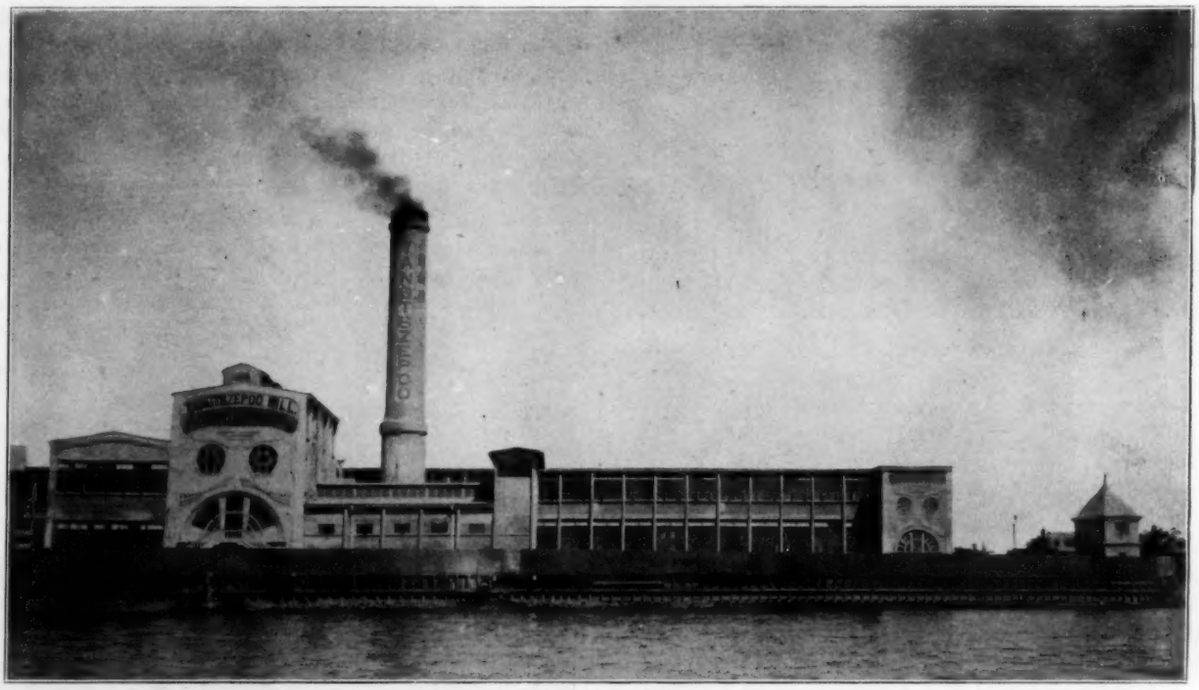
Chinese:						
Two Tigers	68/44	13	3.07	3.85	2.08	5.20
Man and Pagoda	68/56	14	2.85	4.10	2.21	5.52
Stag	68/44	14	2.85	4.55	2.46	6.15
Three Tigers	72/56	15	2.66	4.60	2.48	6.20
Dog and Stork	68/44	15	2.66	4.35	2.35	5.87
Five Sycee	72/56	16	2.50	4.90	2.65	6.62
Japanese:						
Two Geese	60/40	13 1-3	3.00	3.40	1.85	4.62
Phoenix	60/42	13 1-3	3.00	3.20	1.73	4.32
Elephant	60/40	13 1-3	3.00	3.30	1.78	4.45
Dragon	72/48	14	2.85	4.55	2.46	6.15
American:						
Pelzer M.			3.50	4.10	2.21	5.52
Piedmont B.			3.25	4.30	2.32	5.80
Pelzer J.			3.00	4.85	2.62	6.55
Piedmont A.			3.00	4.70	2.54	6.35
Pacolet			2.85	5.50	2.97	7.42
Pepperell			2.85	5.85	3.16	7.90

This list of prices is certainly convincing proof that any hope that our sales of sheetings and drills in China will ever equal those of a few years ago is a vain one. The war and the higher freight rates on raw cotton from India and America which are now prevailing have had a somewhat adverse effect on the cotton industry in Japan but the cost of production has not risen abnormally and there is every indication that our principal competitors in sheetings and drills will continue to be able to offer their goods at much lower prices than we can make them and deliver them to the Chinese buyer. We might possibly produce our goods more cheaply by the use of lower grades of cotton and by sizing the warps more heavily but such a reduction in cost would hardly be sufficient to bring them on a competitive basis with Japanese goods. It is quite probable that there will continue to be a small demand for American sheetings and drills from a limited class of people who are willing to pay a high premium for quality or for certain of our "chops" which have been on the market for many years but the great bulk of the trade in these goods among the mass of the population in China is destined to be taken over by the Japanese and Chinese mills.

SUGGESTIONS FOR REGAINING A SHARE OF CHINA'S TRADE.

With this rather gloomy picture before us the question naturally arises, "Shall we abandon this field and discontinue our efforts to share in the huge cotton goods trade of China, which with the sole exception of India is the largest

in the world? The answer to this question, from my own observation on the ground, is emphatically in the negative. Because we have always largely confined our trade in China to grey sheetings and drills we must not be misled into thinking that they are the only kinds of goods which the country purchases abroad in large volume. It is true that they form an important item in the trade but the consumption of them is confined to Central and Northern China and particularly to Manchuria which is to all intents and purposes Japanese territory. There are many other lines of cloth which are used throughout China which figure prominently in the imports, lines in which Japanese competition scarcely enters and which we ourselves have hitherto left untouched. The principal lines which should interest American manufacturers are cloths of finer construction than sheetings and drills, particularly grey and white shirtings, cotton sateens, Italians and Venetians, prints, khaki, dyed drills, poplins, velvets and a great variety of plain and fancy white and colored shirtings. Of these fabrics those



A CHINESE COTTON MILL RECENTLY ERECTED IN SHANGHAI. IT CONTAINS 45,000 SPINDLES AND IS UNDER ENGLISH MANAGEMENT AND CONTROL.

which ought to be of particular interest to the South are grey and white shirtings. In 1913 the combined value of the imports of these two lines amounted to $25,143,854 or over 30 per cent of the total piece goods valued at $81,514,072 which were brought into China; in the same year the imports of grey sheetings and drills were valued at only $18,302,096 or a little more than 22 per cent of all the cloth imports. Moreover, whereas Japan's share in the trade in sheetings and drills was nearly 60 per cent she supplied less than 2 per cent of the grey and white shirtings. The trade in these last two lines is held almost exclusively by England which country furnished over 90 per cent of the total imports in 1913. It has heretofore been generally accepted that we could not compete with England in grey and white shirtings, first, because they are lighter, finer yarn goods than sheetings or drills and the element of labor enters too largely into the total cost of making them; secondly, that we could not insert the colored headings in the filling at the end of the pieces of grey shirtings; third, that we could not properly size the warps for grey shirtings and fourth, that we could not get the desired finish on white shirtings. It is impossible to reach any definite conclusion in these matters because we have never attempted to make the goods on a large scale. During the last four years I have given especial attention to the question because in almost every large market which I have visited, in Turkey, Egypt, the Red Sea district and Africa, grey and white shirtings loom large in the trade. I have usually found that in the cheaper grades of these goods American manufacturers could compete on the basis of large scale production and that in the medium and fine qualities our cost would run from 10 to 20 per cent higher than the cost of English goods. It is of course impossible to state just where our ability to compete stops but my conclusions have been reached by submitting samples to American manufacturers and having them quote prices. Is it not reasonable to assume that the present higher cost of production in England on account of the war, which is a generally accepted fact and which is confirmed by a recent announcement that the wages of all cotton mill operatives in England would be increased 5 per cent, has largely wiped out this margin in the price of many of the grades of grey and white shirtings which we have heretofore been unable to produce on a competitive basis. When I was in China the head of one of the largest English piece goods importing firms told me that he was buying an increasing quantity of American light weight sheetings (4.70 to 6.00 yards per pound) to take the place of certain English grey shirtings that were too high in price. I am thoroughly convinced that if our manufacturers would devote their energy and time seriously to this matter they would find that herein

lies the greatest hope for recovering a large share of the China trade which we have lost. It may be urged that even if we made these two lines, grey and white shirtings, to suit the China market and at a price that would enable us to compete, we would lose the trade as soon as the war is over and normal conditions are restored. The answer to this is, first, that the cost of producing cotton goods in England will never again be so low as it as been in the past owing to the scarcity of labor, higher wages and heavy taxes, and, second, that if we succeed in establishing our brands and qualities through the adoption of the most economical methods of selling and distribution and careful cultivation of the trade it would be exceedingly difficult to oust them from the market. American cotton goods have

THE SHANGHAI OFFICE OF THE CHINA AND JAPAN TRADING COMPANY, A PROGRESSIVE AMERICAN FIRM DOING A LARGE BUSINESS IN AMERICAN COTTON GOODS.

a splendid reputation for quality in China and so long as they are not too high in price the natives will buy them in preference to others. Heretofore we have had no share in the trade in many lines because our prices were too high. Hence the people did not become familiar with them. Once we succeed in introducing them in the market they will undoubtedly remain, so long as they are not too dear, by sheer force of quality.

The possibility of Japan competing to an appreciable extent in the trade in grey and white shirtings, prints and other lines which are now supplied by England and the Continent is extremely remote. Labor will have to be trained to make finer goods, cost of production will rise and American cotton will have to be used almost exclusively instead of a mixture of Chinese or Indian and American cotton which is employed in the manufacture of Japanese sheetings and drills and which is an important contributing factor in the low cost of these goods. Moreover Japan, with only about 2,000,000 spindles, is not prepared to secure a very large part of the trade. More mills may be built but this will take time and capital and financial conditions in Japan at present are not very favorable to industrial development. As the industry grows costs of production will naturally rise and the margin of difference in the cost of Japanese and American goods will gradually tend to decrease.

It would prolong this article to undue length to give a detailed description of all the lines of goods in which there appear to be excellent opportunities for American manufacturers to compete but which they have hitherto not made or attempted to sell in this large market in the Orient. In a report on the Chinese cotton goods trade recently issued by the Bureau of Foreign and Domestic Commerce, Washington, a detailed description of all the principal fabrics which are sold in China is given and a number of samples which were collected to accompany the report will show the principal widths, qualities and designs in demand. Inasmuch, however, as southern manufacturers are most likely to be interested in grey shirtings because they most nearly conform to the cloths which they have been making for China it may be advisable to give a brief description of them.

DESCRIPTION OF GREY SHIRTINGS.

The standard English grey shirting is 38 to 39 inches wide and 38 to 39 yards long but most frequently 38½ inches by 38½ yards. The constructions range from 56/56 to 72/72 (a few are 76/76) and the weights run all the way from 6 to 15 pounds per piece. A considerable part of the goods weighing 12 pounds are 36 inches wide, 40 yards per piece, 12 inch fold. The 38½ inch goods are usually 15 inch fold and all of them have a colored, corded or tinsel heading, several inches wide, woven in the end of the piece in the filling. Some of these headings are rather elaborate but most of them are plain with one or two colors or with grey filling about twice as coarse as the filling in the body of the cloth and a few shots of tinsel thread. The 12 pound shirtings, 36 inches wide by 40 yards long, do not have headings and American

A CHINESE "TRANSFER TRUCK."

8¼ and 10 pound goods of similar width do not have them. These latter are the standard American 4.70 and 4.00 yard sheetings and in addition to being sold under the mill brands in the open market quite a quantity of them are sold under the special brand of the importers through the weekly piece goods auctions which are held in Shanghai. The 4.70 yard goods competes with English 8¼ pound shirtings and the 4.00 yard with English 10 pound. The statistics do not show the quantity of each weight of grey shirtings imported into China but the most important appear to be 8¼, 10, 12 and 15 pound goods. There are many different qualities even in the same weight of cloth and the price is determined partly by the quality but very

largely by the "chop" and the extent to which it is known on the market because the Chinese dealer lays a great deal of stress on the "chop" and he can seldom be induced to break away from one he has been buying for years and accept another although the quality may be as good or better, unless the price is much lower. One of the best known of 10 pound shirtings sold is 38 inches wide, 72/72 picks per inch, 39 yards per piece with about 22's warp and 30's filling. The importer purchased it in England in April, 1915, for $2.24 cents per piece delivered in Shanghai. The colored heading at the end of the piece is a plain red and white and blue stripe inserted in the filling as follows: 4 blue, 4 white, 4 red, 4 white, 4 blue, 4 white, 4 blue, 4 white, 4 red, 4 white, 4 red, 8 white 16 blue, 8 white, 4 red, 4 white, 4 red, 4 white, 4 blue, 4 white, 4 blue, 4 white, 4 red, 4 white, 4 blue.

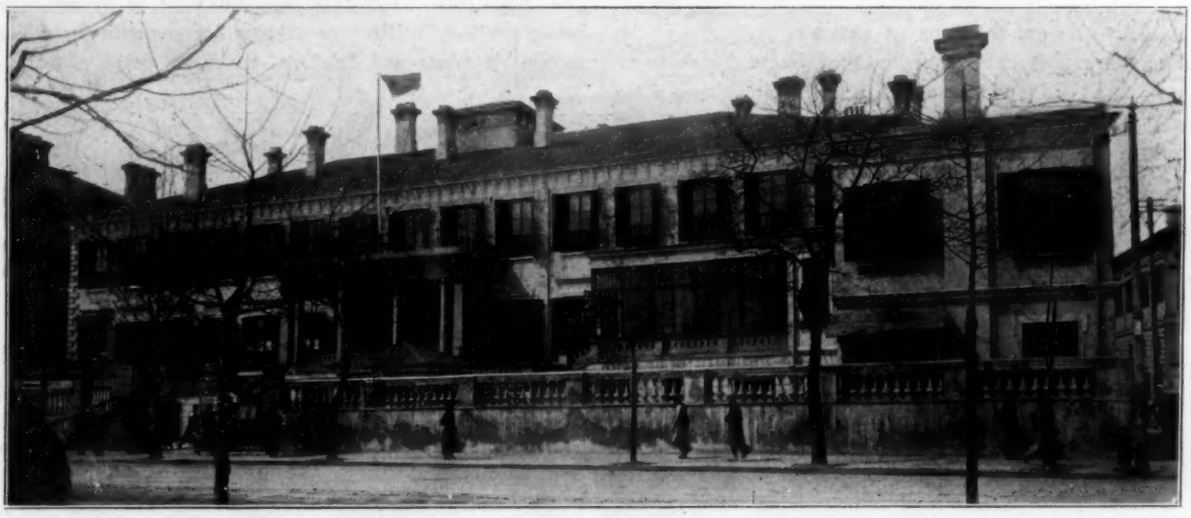
A cheaper quality of 10 pound shirtings has only 60/60 picks per inch and the warp carries considerable sizing. In the shirtings 36 inches wide 40 yards per piece weighing 12 pounds, without colored headings, one of the most popular qualities is 68/68 construction and was sold by the importer to the large dealers in the summer of 1915 at $2.85 per piece. Other brands which were not so well established were selling at $2.60 to $2.75. Samples and detailed descriptions of all the principal grey shirtings on the market can be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and it will be well worth while for our manufacturers to examine and study them.

THE DEMAND FOR WHITE SHIRTINGS.

White shirtings which we generally designate by the term "bleached goods" or muslins are another important item in the cotton goods trade which deserve the consideration of our manufacturers. In 1913 the imports of these goods amounted to 4,537,900 pieces worth $14,765,992. In value they exceeded the imports of any other single item in the trade and in quantity they were surpassed only by grey shirtings. These goods are mostly 36 inches wide with 40 to 43 yards in a piece and 50 pieces in a case. There is a wide variety of constructions and finishes from very thin goods of 44/36 or 44/44 picks which are usually heavily back-filled, to closely woven 72 or 88 square fine shirtings with a soft finish. The greater part of them are simply grey shirtings bleached and if we make these goods we ought to be able to furnish white shirtings also. With the rapid progress in bleaching which has been made in the South in recent years we should have no great difficulty in imitating the finishes which the China trade requires provided we make grey goods of the proper construction. The large collection of samples at the Bureau of Foreign and Domestic Commerce represent most of the qualities and finishes on the market and a close study of them ought to enable any expert finisher to imitate them.

LARGE MARKET FOR PRINTS.

There is a large and growing demand for prints in China and this is another line which ought to interest many of our Southern manufacturers who have been producing print cloths for many years. Formerly England virtually had a monopoly of this trade but about five years ago Russian manufacturers set to work to get their goods in the market and the statistics of the imports into China since that time demonstrate very clearly the success which has attended their efforts. In 1910 the gross imports of shirting prints into China amounted to 638,609 pieces (including English prints imported via Hongkong) or about 80 per cent and Russia only 71,425 pieces, or less than 10 per cent. Turning to the statistics of 1913 we find that the total imports had increased almost 100 per cent to 1,145,072 pieces but of this amount England's share was slightly less than 450,000 pieces or about 40 per cent whereas Russia furnished 619,020 pieces or approximately 55 per cent. This record ought to be brought home to those pessimists who are unfortunately too prone to assert that it is impossible to compete with England in the world's cotton goods trade. The Russian manufacturers after a thorough study of the trade put on the China market a line of prints with a wide range of attractive designs that were of better quality than the English goods with which they had to compete. At first they were sold at lower prices than the latter but at



THE SHANGHAI OFFICE OF JARDIN MATHESON & CO., ONE OF THE OLDER AND STRONGER ENGLISH FIRMS ENGAGED IN THE CHINA TRADE. IN ADDITION TO DOING A LARGE BUSINESS IN IMPORTS AND EXPORTS, THE FIRM OPERATES A LINE OF STEAMERS ALONG THE CHINA COAST AND MANAGES A NUMBER OF COTTON MILLS AND OTHER INDUSTRIAL PLANTS IN THE COUNTRY. BRANCHES OR AGENTS ARE MAINTAINED IN PRACTICALLY EVERY TOWN OF IMPORTANCE IN CHINA.

present they command a higher price. They are so firmly established on the market that had it not been for the European war it is safe to predict that this trade would very soon have been almost wholly in the hands of Russian manufacturers. But the war has seriously crippled the Russian industry and greatly curtailed the output of the mills while at the same time costs of production have risen considerably. If American manufacturers can succeed in solving the difficult question of dyestuffs they have a splendid opportunity to get a share of the China trade in this important line of goods. Russian prints are usually 24, 25 or 26 inches wide, 88/64 or 88/68 construction, 30 yards per piece with 30, 40 and sometimes 60 pieces packed in a waterproof bale. In the spring of 1915 the large dealers were buying these goods from the importers at about 7 cents per yard. English prints are mostly 60/60, 64/64, 68/68 and 72/72 construction, 30 yards per piece with 30 or 60 pieces packed in a tin lined case. The wholesale prices to the dealers in Shanghai at the time I was there were 5 to 6½ cents per yard.

OTHER GOODS IN DEMAND.

There are numerous other lines of cloths which enter largely into the cotton goods trade of China and many of them might be supplied by our manufacturers. Some of these that may be mentioned are poplins, both plain and colored (mostly black and blue); dyed sateens and black Italians and Venetians which, because of their silky appearance, are very much in favor among the middle and higher classes of Chinese and which are used in making the characteristic Chinese caps and shoes; Turkey red cambrics; velvets 18 and 22 inches wide and costing 12 to 25 cents per yard c. i. f. Shanghai; khaki and dyed drills; fancy woven stripes and checks and cheap cotton blankets.

TWO VIEWS OF NANKING ROAD, ONE OF THE PRINCIPAL BUSINESS STREETS IN SHANGHAI.

OUR OPPORTUNITY IN CHINA.

The field in China is a large one and volumes might be written on the trade and the opportunities which it holds for American cotton manufacturers, opportunities which by reason of the war and the consequent curtailment of supplies from England and the Continent except at greatly increased prices are expanding day by day. The amazing resources of China are apparent to anyone who has spent any time or traveled in the country. The development of those resources has been slow but steady and there is no gainsaying the fact that the purchasing power of the people is rising year by year. Americans more than any other nationality in the world enjoy the good will, confidence and esteem of the Chinese people. We have secured this position through the influence of our missionaries, schools and hospitals throughout the country which have done signal service in the moral, intellectual and physical welfare of the enormous population, and through our policy of remaining aloof from the internal affairs of the country, of refraining from territorial aggrandisement and maintaining an open door with regard to the trade of the country. Our remission of our share of the Boxer indemnity which was exacted from China by all the large powers was an act which made a profound impression on the Chinese and has been an important factor in securing to us the high regard and friendly feeling which they entertain for us. The money which we returned to China is being largely used for the education of Chinese students in the United States and each year several hundred of these young men return to their native country imbued with American ideas and a distinctly kindly feeling and an admiration for America and Americans. But this splendid asset is by no means being properly utilized as a basis for cementing our commercial interests and relations with this great country of the Orient. In the year 1913 China imported for consumption merchandise of all kinds to the value of $422,775,535; our own statistics show that our exports of all articles to China in the same year amounted in value to only $37,930,292. After making due allowance for the fact that some American goods reach China indirectly from other countries the fact remains that we have less than 10 per cent of this enormous trade which is far below what we should have.

In order that we may secure a larger share in this valuable trade we must first make a thorough study of the country and its requirements. We need better banking and shipping facilities more than anything else; we need to make a cooperative organized effort to introduce our goods in the market; we must send well-trained men to visit China, to live in the country and travel over it enough to become acquainted with the people, their habits, customs and needs. Often in the course of my travels over China which covered a period of nearly twelve months, the thought came to me very forcibly that if the presidents and treasurers and large stockholders in our cotton mills could only visit the country and see for themselves the vast opportunities for commercial development which it holds, particularly in

the cotton goods trade, they would soon come to realize that in this enormous territory of over 4,000,000 square miles with its 400,000,000 people they are not by any means securing the share of the trade to which they are entitled. And they would return with a deep determination to devote all their efforts and energies to the task of regaining the position which they once held in the cotton goods trade of China. Undoubtedly they would have to make radical and perhaps a few expensive changes in their mills in order to properly equip them to produce the goods which the market requires and which have been pointed out in this article, and they might have to reform their methods of selling and distributing their goods. But the adoption of such a broad, far-sighted policy, great as the temporary sacrifice and expense might seem, would in a few years bring results far and beyond their most sanguine expectations.

Good Work and Good Health.

BY G. D. CRAIN, JR.

The average manufacturer would not be much to blame for getting a bit tired of hearing as much "uplift" talk as has been inflicted upon him during the past few years; and in view of the fact that the textile goods producer, especially, has been put on the defensive in most cases, his natural attitude has been to resist, rather than invite, suggestions looking to innovatons along the line of welfare work.

Nevertheless, it is only fair to say that the cotton manufacturer of the South—certain individuals, of course, doing more in this respect than others—have shown a decided disposition to undertake practical work looking to the betterment of conditions for their employees, as much in a broad spirit of cooperation with them as for the purpose of profiting by the arrangement.

It is worth noting, however, that welfare work, considered from the narrow standpoint of dollars-and-cents returns, has justified everything that has been done by the manufacturers of the country in its promotion. In other words, the return to the industry in the form of good feeling, physical ability and improved morale has been sufficient to offset any incidental expenses involved in carrying out the idea.

At the same time it is probably true that the manufacturer who undertakes welfare work merely for what he can get out of it will not realize as good results as if his object were sincerely the betterment of the working and living conditions of those upon whom he is dependent for the production of his goods. There is nothing which spoils the effect of such an effort more quickly than introducing the suggestion that the manufacturer is looking for an immediate return upon his investment.

Reference to living conditions emphasizes the fact that the use of a nurse has been found a highly desirable feature of the organizations of many important industries, in and out of the cotton manufacturing field. The nurse who is engaged in industrial welfare work can be of immense value to her employer, not only in assisting in cutting down unnecessary lay-offs, which are often not warranted by the physical condition of the employee, but in doing constructive work in the homes along the lines of domestic hygiene, etc.

Such work reinforces the proposition that the employer can hardly help being as much interested in the conditions which surround the worker at home as when he or she is in the mill. In fact, one influences the other to a marked degree. Suppose, for example, that a mill-hand were accustomed, through ignorance of the laws of health, to sleep in a poorly ventilated room, with a number of other persons breathing the same vitiated air over and over again. That employee very likely would come to work with a headache, and with senses dulled by poisons in the system, which the blood, lacking sufficient oxygen, had been unable to throw off.

It goes without saying that in such a condition the employee can hardly do her best work. Further, even assuming that the system of remuneration is such that the reduction of volume will mean a loss to the operative, there is still to be considered the loss in the productive value of the machine. And, going a step further, consider what having a mill full of such dullards—whose condition was due to an unnecessary defiance of a first principle of right living—would mean, in terms of the quantity and quality of goods produced.

And there is another phase of the same proposition which can hardly be overlooked, especially by the student of accident hazards. Anybody who has investigated industrial injuries, especially those happening in cotton mills, can hardly fail to be impressed with the fact that the great majority of all of them are avoidable and unnecessary. The usual commentary on an accident of this kind is, "Carelessness," and the victim is condemned, instead of being given sympathy.

Carelessness is a big word and covers a lot of factors which ought to be considered in this connection. The person who is physically below par is going to be careless. At least, the effects of an unconscious letting down of the faculties, due to the reduced energy available, are the same as are noted when the individual is careless for other reasons.

Consequently, if the employee is suffering from even so simple a complaint as constipation—which is quite likely to be the case in many instances—the effect is the same, as far as increasing the danger of accident, as if the operative had suddenly become voluntarily and wilfully careless. Dizziness, blurred vision and other effects of a bodily condition are the best possible assistants in creating ideal circumstances for an accident, and one who studied the case from the outside, without taking into account the physical condition of the victim, might have difficulty in reaching any conclusion other than that the operative disregarded every rule of the mill and thoughtlessly endangered her own safety.

Now, accidents are undesirable from any standpoint. Even when the manufacturer can take refuge behind the common-law defense of contributory negligence, voluntary assumption of risk, etc.; he is not seeking for opportunities to use this defense, and in point of fact would not desire to interpose them to prevent giving some sort of assistance to the injured person, whose hurts were received in his mill, even though apparently due to the employee's own fault. But the advent of workmen's compensation, which is now in effect in 25 states, with a strong probability of the number being increased right along, has destroyed the defenses referred to, and has increased a hundredfold the measure of liability which must be assumed by the em-

ployer. The latter is to be called on to pay for all accidents suffered, intoxication and wilful self-injury being about the only exceptions to be found on the statute books covering this proposition.

Hence if we once accept the principle that the condition of the health of the employee has a vital and direct bearing on the accident hazard, the increasing cost of accidents will necessarily lead to the conclusion that it will pay, as a commercial proposition, to endeavor to raise the average condition of the health of employees.

In fact, it would be next to impossible to disregard this conclusion after a logical presentation of the facts. And if the desire to promote the well-being of his employees were developed by the manufacturer for other than selfish reasons, the latter considerations would reinforce the belief that such effort on his part would meet with sufficient recompense to justify whatever expenditure might be involved.

Having a nurse at the plant, whose duties were coextensive with it and the homes of employees, would make it possible to bring about many improvements which are not now practicable. For instance, one suffering with a slight ailment, not sufficient to prevent "going through the motions" of the day's work, and still enough to interfere with its being handled in the most efficient way, could easily be supplied with the simple relief which the case might require, not only bringing about a more comfortable feeling on the part of the operative, but insuring better work with less danger of accident.

In connection with the accident hazard, provision of medical service, which is an almost inseperable feature of welfare work, has an important by-product, so to speak, in physical examination of employees. Defective vision, weak heart, chronic diseases, etc., are determined by such examinations; and besides enabling the mill to discriminate between desirable and undesirable workers, which cannot always be done without such data being provided, this plan has the added advantage of enabling employees to be placed with due regard to their special qualifications and disqualifications for certain classes of work. This, too, is important from the standpoint of the liability of the employer under workmen's compensation, and anticipating probable claims through the non-employment of one whose physical defects make him likely to receive injuries in his work is good business and good sense.

The establishment of some sort of dispensary or first-aid room, for use not only in the treatment of accidents, but for sickness, is desirable, and naturally grows out of the employment of a nurse or adding the part-time services of a physician. The latter can be of great service in connection with improving conditions in the homes, though as pointed out, this is one field for which the nurse seems to be especially fitted.

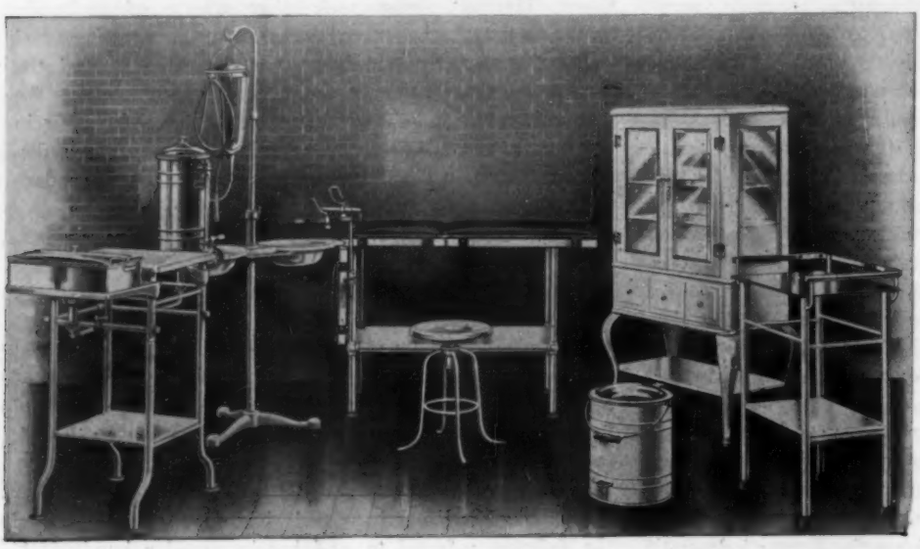
The general subject of welfare work, not raised into the clouds of philanthropic activity nor actuated solely by unselfish motives— though they should be present in order that the best results be obtained—but put on the basis of giving the personnel of the plant the same opportunity to develop efficiency as the mechanical features are given, is of growing importance, and should not be disregarded by the manufacturer who hopes for the best results to flow from his efforts.

Do You?

Do you buy a new fuse every time an old one blows? There are many who have to do this because they still use the ordinary type of non-renewable design. Still others have resorted to the dangerous practice of refilling these old style fuses, often resulting in inadequate protection against overloading the circuits of which the fuses form a part. This introduces a distinct and additional fire hazard. A combination of safety and economy is what every mill executive desires. Write at once to the Economy Fuse and Manufacturing Co., Kinzie ond Orleans streets, Chicago, and ask for Bulletin No. 7 and information on how to secure a sample fuse free of charge.

First Aid Room Equipment for Industrial Plants.

It is a well established fact that industrial plants who are prepared to take immediate care, on the premises, of injuries received by their employees, without losing the valuable time consumed in sending such cases to a hospital, will not only conserve the efficiency of their employees but save a great amount of money, which otherwise has to be expended in after treatment and compensation. V. Mueller & Co., Inc., have fitted up many plants with the necessary equipment; such as emergency rooms and laboratories. If you are interested, send for illustrated catalog C 21 and list of equipment such as has been installed by well-known plants. Address V. Mueller & Co., Inc., 1775 Ogden Avenue, Chicago, Ill.



The Value of Co-operative Work*

As I understand it we are mostly business men assembled for a business purpose, and I believe the nearer we can come down to business in our conventions and in the work of our committees the better will be the results in the future of the work of this association. Hence I shall not attempt an oration here today, but shall confine myself to a few observations of matters which have impressed my mind as an employer of labor in this state during the last fifteen years.

The Manufacturers' Association of Georgia is one year old today. It is just beginning to feel its way, just beginning to walk. Ten years from now or twenty years from now when we have learned to walk and to stand shoulder to shoulder, we want to be able to look back to this day and be able to say that we watched our steps, that we proceeded on our way prudently, and that we earned the good will of all classes of our fellow citizens in carrying out the purposes and policies that may appeal to us as wise.

Sixteen years ago the Georgia Industrial Association was organized in this city. It was so named as it was thought at that time that manufacturers in all lines would readily cooperate. It proved, however, that only those corporations engaged in the manufacture of textiles took an active interest, and the name was later changed to the "Cotton Manufacturers Association of Georgia." Having been a member of that association from the beginning and during that time familiar with the work of its committees, it may not be considered a presumption on my part if I utter a word or two of advice, or even caution, to those who as executives and committee chairmen shall shape the policies and control the destiny of this association.

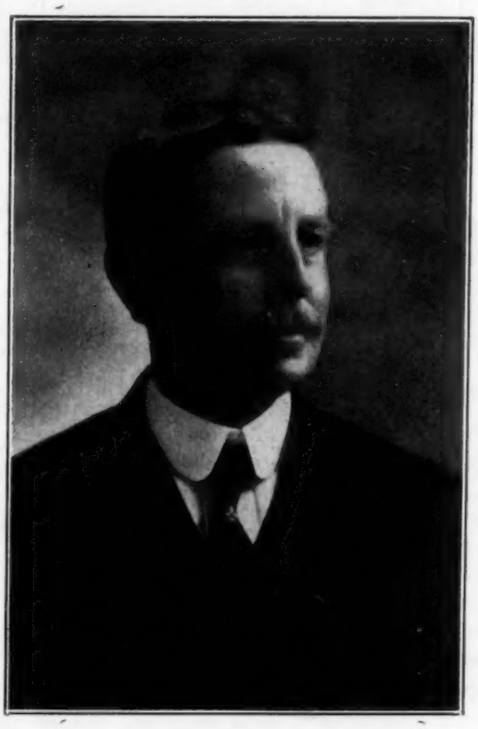
I believe that the first prime essential to be understood is the policy of this association relating to the attitude it shall assume towards the public at large. This attitude should be above any possible criticism from any source. We are here not only representing the stockholders of our various corporations, but as citizens of Georgia only anxious to be of good to the greatest number in the upbuilding of the commercial life of the state.

I think our efforts should be based on a policy of conservative defense, and not one of aggressive offense. In other words don't hunt trouble but be ready to meet it. That apt word "Preparedness" now so much in vogue covers the ground.

In all associations of this sort the legislative committee and its legal counsel has more to do than all other committees combined. Not that they propose new laws for enactment, but to keep the other fellow from doing it.

Among the labor leaders in Georgia and among the men who make up our legislature there are always some wise men and there are always some otherwise. Without impugning the motives of any of our fellow citizens, there is always coming through the legislative mill a mass of proposed new laws. Many of these are necessary and commendable, but some are based on ignorance, others unfortunately on malice and envy, and some on honest socialistic belief; but the large percentage are aimed at the corporations of the state, the general tendency of all of them being to pull down instead of build up. It's this sort of thing that makes this association necessary and its legislative committee imperative. Why should we not organize? Everything else in the state is organized. The agriculturists and horticulturists have their state associations, likewise the lawyers and doctors, also the jobbers and retailers. Our wives, sisters and sweethearts are organized against the brute man, and even the undertakers meet once a year to study out the most pleasing methods of putting us underground. Should we not then, gentlemen of the convention, take active measures to keep ourselves above ground, commercially?

Several years ago I had occasion to go down in southwest Georgia on a dove shoot. That was before Charlie Davis and his crowd got to passing these game laws, which prevent a man from sitting on a camp stool and shooting doves at daylight. We went down to get a little recreation in southwest Georgia. I got there a night before in order to be out at daybreak, and I was assigned to the home of a splendid citizen of the little town, who was the largest merchant, and who owned more land than any other man in that county. I had known him in a business way prior to being entertained by him in his home, and, sitting around the fire-place that night smoking a cigar, I got to discussing matters with him. Knowing him well enough, I asked him "How in the world is it, my friend, that you, acknowledging the fact that your education has been extremely limited, have become possessed of all this realty here, and are the biggest merchant here, and all that sort of thing, without an education?" "Well," he says, "I'll tell you. When



F. B. GORDON.

*Extracts from an address by Fred B. Gordon, President of the Columbus Mfg. Co., Columbus, Ga., before the Georgia Manufacturers' Association at Atlanta, Feb. 10th, 1916.

I was a boy, they sent me to school, and I studied readin', 'ritin' and 'rithmetic; I got along pretty well until I struck 'rithmetic. I learned how to add pretty well, and multiply, and subtract, and simple interest didn't bother me much, but I tell you, when I got to compound interest, I threw up my hands, and I went to studying self-interest, and I have been studying it ever since." (Applause.)

Now I want to apply that in this way. Just the reverse of that is what we need in our association. As individual members of this association, we don't want to study individualism, but we do want to get together, and study cooperation. "Corporation" and "cooperation" are pretty nearly together, and it is only by getting together that we can accomplish anything.

But it is not only new legislation in our own state that demands our attention, for with the present tendency of the federal government to encroach upon the rights of the state and the individual rights of the people of the state, we find ourselves as business men, compelled to take an absorbing interest in national legislation, and through a central body like this association, to convey to our representatives in Congress, in no uncertain terms, our views and our wishes concerning legislation which we know has a vital bearing upon our interests and our rights under the constitution of the United States.

As an illustration take the Keating-Owen Child Labor bill recently passed by the House and now pending in the Senate. Those close to the scene of action advise me that the bill is very likely to pass. When once it becomes a law, "Uncle Sam" is to say for how many hours and at what age the people of Georgia may be allowed to work.

In commenting upon this proposed child labor legislation I would not like to create the impression that the progressive cotton mill men of Georgia either advocate or are dependent upon the work of children below the age of 16 years. Our position all along has been that it was a matter for state legislation. We urged and helped to pass the present state law putting the minimum age at 14. While we are against federal interference in this or any other state matter, the Keating-Owen bill holds no terrors for the best mills in the south. In this connection I may state that the company with which I am connected has, out of 750 employees, only 6 between the ages of 14 and 16.

Irrespective of cotton mill conditions however there are thousands of poor children employed on the farms, in city stores, and by the public utility companies. Many of these will not attend school of their own volition, and in many cases indifferent and indolent parents will not force them to try to get an education. Thus the question of compulsory education looms up with greater force than ever. So far the only organized body of citizens in this state to talk and work for compulsory education has been the cotton mill men ably assisted by the women's clubs. This association should take up this matter with all vigor, for unless the good Lord should perform a miracle and make statesmen out of some of the politicians and put a lot of backbone into them, this great question will be allowed to drift along as in the past.

I have received from Wm. Schley Howard, Congressman from this district, a copy of the "Congressional Record" dated Jan. 26th, 1916. Mr. Howard, who was the only Congressman from Georgia to vote in favor of the Keating-Owen bill, explained his vote in a manly and intelligent way, and to my mind he was wholly conscientious in his views.

[Note: Mr. Gordon was slightly in error in this statement as Edwards of the first district also voted "yea." With the exceptions Edwards and Howard, Georgia congressmen voted solidly against the bill.—Editor.]

In quoting from his remarks I do so with no intent to criticize him, but to show in this instance, which is one of many in the past, how easy it is for congressmen to be out of harmony with the best thought of their own section, and how needful it is that through an association like this, we can get into better mutual relations with our representatives and senators. I quote Mr. Howard's remarks as follows:

"The law in Georgia is not like the law in the Carolinas. Our age limit is two years higher. We have, as a rule, a lot of broad-minded, humane, and patriotic men engaged in the manufacture of cotton in our state. (Laughter.) The manufacturers of Georgia are not now attempting to wring gold out of the bodies of innocent little children. The strong arm of the state law protects them under the age of 14, and they do not work them under this age lawfully any more."

Continuing, he said:

"We hear much about the mill owners and the poor widows, but they are not wholly to blame for child-labor conditions. In a great many cases trifling, no-account, drinking daddies are as much to blame for conditions in the South as they are in any other section of this country. They have large families—five, six and seven children; they are not willing to make a living by the sweat of their faces, and they move their families to a mill town and put their innocent little children in pawn that they may live in idleness and ease, and there is not a man from the South or from any section of the country that does not know that that is true. (Applause)."

Now had Congressman Howard known the facts he could have stated that the Cotton Mill Association of Georgia years ago had procured an amendment to the vagrancy laws of Georgia aimed especially at this class of undesirables, which he designates as "drinking daddies," and that they are now largely weeded out in the textile centers of the state.

Congressman Howard concluded with the following, which does credit both to his head and his heart:

"The ignorance of our people is our greatest weakness, and our greatest asset is our children—educated in mind, strong in body, clean in morals. Compulsory education, strict child-labor laws, in my humble judgment, are imperative in the making of a nation great. (Applause)."

Now gentlemen, I want to go back to what I quoted from the remarks of Congressman Howard, where he said "We have, as a rule, a lot of broad-minded, humane, and patriotic men engaged in the manufacture of cotton in our state. (Laughter)."

Why that laughter? Was not Congressman Howard stating what he believed to be true? Where is the joke? The joke lies in the fact that the manufacturers of Georgia have been so misrepresented before the country at large by the National Child Labor Committee, and its southern representatives, that the sentiment is such that the people, who heard that remark, met it with scorn and ridicule.

I have gone into this simply to show the need of an organization like this. We have got to assert ourselves; we have got to assert our conscience, our standing, before the country, whether we are making cotton goods, or steel wares, or woolen goods, or stoves, or anything else. Whether you employ children or not, you suffer opprobrium, and it should not rest upon us.

Who are the men who have been connected with the textile industry of this state? You all knew Dr. Turner and Charlie Tuller of the Exposition Cotton Mills; you all know Allen Johnson, president of that corporation; you

all know S. A. Carter, president of the Gate City Cotton Mills; you all know Booker Scott, of the Scottdale Mills; you all know W. J. Kincaid, of Griffin, and Fuller Callaway of LaGrange; you all know Geo. Lanier, of West Point; you all know H. P. Meikleham, of Lindale; you all know J. L. Hand, of Pelham, and W. J. Vereen, of Moultrie; you all know G. Gunby Jordan, and E. W. Swift, of Columbus; and last but not least you all know B. S. Walker, of Monroe, father of our present attorney-general, and former president of the Georgia Cotton Manufacturers' Association.

These are the kind of men, that *somebody* laughed at, when Congressman Howard made the remark already quoted. Although I was in Massachusetts, when I was a boy, and I have kept up pretty well with public men, I give you my word I couldn't go to that state and in any way produce a better set of men than I have named as Georgia's citizens, true to themselves, true to their state, true to the social conditions, they have been conscientious men, and fully able as intelligent men to meet any criticism, that can be passed upon them.

I will not mention the name of the National Child Labor Committeeman. He is a Presbyterian; so am I. I might tell a story about a little girl, brought into a Mission School on Sunday, and the teacher trying to locate the child asked what her father did. She said "He is a Presbyterian, but he is not working at it much." (Applause.) So my friend is devoting his attention solely to this "Child Labor" work. I don't wish to impugn his motives, but we have found in dealing with that committee, that when we agree to meet them half way they dodge and change about. They had up the age limit at 16, hours at 10; the next thing they wanted was the age limit 18, hours at 8; simply because these paid emmissaries of the Labor Federation and Child Labor Committee have got to keep agitating in order to draw their salaries.

Another great question which should receive the attention of this convention is the tariff. At this time a very wide and concerted effort is being made to have the tariff put into the hands of a non-partisan permanent tariff commission. The chamber of commerce of the United States, the National Manufacturers' Association, and other large national bodies of business men have each appointed special committees to take up this question.

In conclusion I want to say this to all Georgia manufacturers: You owe it to your own interest to join our association. The yearly expense is small and the investment is a good one. It's insurance against unwise and unfair legislation which will hurt you if passed. Every concern in the state of any size has its credit man as insurance against losses, and its rate expert as insurance against errors or overcharges by the transportation companies. But each concern in the state cannot well afford to employ a lawyer of its own, and if it did it would lead to nothing, or confusing results. Only by joining forces in one powerful central association can the work have strength enough behind it to make itself felt. Remember that labor has, and has had for years, a powerful organization in the state while the employers of labor have had none. Don't sit back and content yourself with the idea that now we have an association you will be protected. Come up and do your part.

Mr. President and members! As we continue the work of this organization let us not forget the immortal words emblazoned upon the seal of our state: "Wisdom, Justice and Moderation."

American Coal Products Company Changes.

It is announced that the American Coal Products Company and the Barrett Manufacturing Company have decided to unite the good-will and high reputation of both concerns under the name of The Barrett Company.

The American Coal Products Company is well known in connection with the sale of sulphate of ammonia, and heretofore owned the stock of the Barrett Manufacturing Co.

The fact that all the coal tar chemicals, disinfectants, roofing, waterproofing, road-making and wood preserving materials have been made and widely advertised in the name of the Barrett Manufacturing Company has added immensely to the good-will attached to the Barrett name. This increase, however, has not been connected in the minds of the general public with the securities of the American Coal Products Company.

The new Company will have the same amount of stock as the American Coal Products Company and the change in name will be accomplished by exchanging the outstanding certificates share for share.

Some of the widely advertised trade-marks of the Barrett Manufacturing Company will be recognized in Barrett Specification Roofing, Tarvia, for roads, and Congoleum floor coverings—the latter being distributed by the Congoleum Company department of The Barrett Company.

The products of the chemical department of The Barrett Company are receiving particular attention at this time, due to the European situation, and it is expected that this branch of the business will doubtless appeal to users of these products in this country.

The Barrett Company in this department has produced for many years pure (natural) carbolic acid, cresylic acid, refined naphthaline, (in various forms) benzol, toluol, etc., in addition to which they also now manufacture considerable quantities of synthetic carbolic acid (phenol).

Sanitary Engineering Co. Incorporates.

Charter has been issued to the Sanitary Engineering Co., of Charlotte, N. C., to do sanitary engineering of all kinds and manufacture sanitary reinforced concrete septic tanks of all capacities to meet the demand for these tanks on both a large and small scale. The authorized capital stock is $50,000, with $10,000 paid in by W. E. Thomas, of Charlotte, N. C., and others.

This company has had several large contracts during the past year when under the direct management of W. E. Thomas, a civil and sanitary engineer formerly of New York City, and is now engaged on two contracts installing 350 residential sewage disposal plants for the Lanett Cotton Mills, Lanett, Ala., and 100 for the operatives' houses in the Gibson Mfg. Co.'s village at Concord, N. C.

Twentieth Annual Convention.

The twentieth annual convention of the American Cotton Manufacturers Association will be held at the Piedmont Hotel, Atlanta, Ga., on April 4th, and 5th, 1916. A word to the wise! Be there!

Mill Conditions and Market Reviews.

Southern Mill Situation.

The events of the past few weeks have been the cause of much worry and anxiety to cotton manufacturers in general. The uncertain trend of the cotton market and the acute situation brought about by the evident success of the bear raid has robbed the market of all its rational aspects and put it upon a purely speculative basis. While the consumption by American mills has been abnormal, due to the fact that every spindle is fully occupied, and nearly every mill is sold up for months ahead, still one must not overlook the fact that the into-sight movement of cotton has been abnormally large, showing that the farmer is selling on this basis of price and at the same time stocks accumulating at the ports of export are some larger than they have ever been, while spot sales reported in the various authorized spot markets are but a mere fraction of the stocks on hand. All this tends to make not only the spinners but the ultimate consumer of yarns and cloth cautious so far as placing business for future delivery is concerned. Then again, there seems to be a difference of opinion among experts and those in touch with the situation as to the prospects for the next crop. The bears talk about the overflowing of the Mississippi Valley, increased acreage particularly in Texas, etc., while the bulls preach of increased demand and phenomenal prices when peace sets in, whenever this may be. The whole cotton situation is, as we have said before, on a purely speculative basis, which in normal times would hurt business with the mills.

Cloths, in weights and construction heavy enough to be used as a substitute for burlap, are in good demand, with prices firm. Burlap at present is almost an impossibility, the imports amounting to but a very small fraction of the normal, and the supply threatens to become less and less, due to the large demands on the India mills made by the English Government for material for sacking in the trenches. The stock on hand in this country is becoming almost exhausted, and bag manufacturers and those using their product are rapidly turning to cotton.

The situation in finer counts and in colored goods is not so good, due to the well-known scarcity of dyestuffs, although at the present time we do not know of any mill being stopped for lack of this commodity. This same situation is hindering the marketing of coarse yarns and carpet yarns, but the principle drawback to a good market for these coarse yarns is the fear of the mill man himself that he will not be able to satisfactorily dispose of his product, this anxiety resulting in his taking the first price offered by the New York commission men and yarn speculators.

On the other hand, it is really gratifying to look around us and see our Southern mills filled up with orders and running every available spindle to its full capacity, making a brave effort to make the best of a trying situation, and reaching out into new markets. A great many Southern yarn mills are now exporting large quantities of yarn to South America, and it should be their aim to keep this market even in the face of the strenuous competition which is bound to arise in these fields when they are once more open to European spinners. It should also be the aim of coarse mills who are now making bag fabrics to see that the consumers of their goods remain consumers, and do not revert to burlap when this material once more becomes available.

The greatest era of prosperity Southern mills have ever known is being looked for by many and Southern mill men are wide-awake and keen enough to be ready to seize this opportunity while it is theirs. With the best cotton mill labor in the world, and the raw material at their very doors, with science and skill second to none, the time is approaching, if not already here, when the Southern spinner will come into his own.

J. C. SAUNDERS, President of the Bonham Cotton Mills, Bonham, Texas, stated in a recent interview with COTTON'S representative, that conditions are much better in Texas now than for several months. "The general business conditions of Texas are almost normal," he said. "Some sections of the state are in a flourishing condition, while others have hardly recovered from the blow of 1914. Taken as a whole the state is fully engaged in the work of the year, and business generally is assuming an attitude of optimism, yet withal there is a decided tendency among merchants and business concerns to act conservatively. Money is plentiful to carry on all legitimate enterprises, yet there is no disposition to plunge into new ventures.

"Texas cotton mills are emerging from the hard times with renewed hope and better prospects; they have every reason for believing that better times are ahead. The demand for osnaburgs and ducks for sacks has been a boon to the Texas mills. There is no indication of more mills being built, but present mills will improve and enlarge their equipment as fast as earnings permit. Labor is plentiful and contented, and contrasted with a year ago, the situation is very satisfactory in Texas."

This month finds the cotton machinery manufacturers overloaded with orders, and at more satisfactory prices than they have been able to get for several years. The chief problem now is the matter of deliveries, as the question of price seems to be a secondary consideration. That Southern cotton mills are quite active at this time is shown by the following list which have placed orders for equipment recently or are now in the market.

Thatcher Spinning Mills, Chattanooga, Tenn., approximately 10,000 spindles.

Bladenboro (N. C.) Cotton Mills, cards, drawing and roving.

Mooresville (N. C.) Cotton Mills, 80 deliveries of drawing.

Montala Mfg. Co., Montgomery, Ala., is installing a quantity of carding and spinning machinery, and in addition to this has recently placed order for 48 deliveries of drawing.

Spray Cotton Mills, Spray, N. C., roving frames.

Muscogee Mfg. Co., Columbus, Ga., has placed order with the Saco-Lowell Shops for approximately 25,000

spindles for the new mill which they expect to build this summer.

Marble City Mills, Sylacauga, Ala., new drawing frames.

Maginnis Cotton Mills, New Orleans, La., have placed several orders recently for new machinery. This mill has been very successful the past year, and there is an active demand for their goods. Their product is sheetings, duck and osnaburgs.

Several of the mills at Rockingham, N. C., have recently placed orders for machinery, among these being the Ledbetter Mfg. Co., Roberdel Mfg. Co., and Great Falls Mfg. Co.

The Indian Head Mills of Alabama, Cordova, Ala., have placed an order with the Saco-Lowell Shops for a large quantity of machinery to be installed during the coming summer.

The Eureka Cotton Mills, Englewood, Tennessee, have recently contracted for pickers, cards, roving and spinning machinery.

An order for 31 spinning frames has recently been placed with the Saco-Lowell Shops by the Lanett Cotton Mills, West Point, Georgia.

About 26,000 Whitin spindles have been contracted for by the Republic Cotton Mills, Great Falls, S. C.

Dwight Mfg. Co., Alabama City, Ala., will install 26 roving frames, an order for this number having been placed recently.

The Quitman (Ga.) Mfg. Co., is placing orders for a considerable quantity of machinery.

Several of the J. W. Cannon string of mills are adding machinery at this time, *viz.*, Cannon Mfg. Co., Cabarrus Cotton Mills, Kannapolis, N. C.; Cannon & Co., York, S. C.; Patterson Mfg. Co., China Grove; Wiscassett Mills and Efird Mfg. Co., Albemarle; Gibson Mfg. Co., Concord, N. C.; and Kesler Mfg. Co., Salisbury, N. C.

The Roanoke Mills Co., Roanoke Rapids, N. C., has just placed order for a considerable amount of machinery, adding to practically every department of the mill. This mill is now under the management of J. A. Moore, formerly of Henderson, N. C.

The Hogansville Cotton Mills have contracted for machinery for their new plant, including 85 cards, 80 deliveries of drawing, a full line of pickers, roving, spinning and spoolers. They expect to install this machinery during the spring months.

The Valdese (N. C.) Mfg. Co., has recently placed an order for picker machinery.

Abigdon Mills, Huntsville, Ala., have contracted for 12 additional spinning frames.

Alfred Moore, President of the Jackson Mills, Iva, S. C., has placed an order with the Saco-Lowell Shops for picking, roving and spinning machinery.

Monarch Cotton Mills, Union, S. C., are preparing to receive the pickers, cards, drawing, roving, spinning and spoolers recently ordered.

The Broad River Mills, Blacksburg, S. C., have placed orders with Edwin Howard, Greenville, S. C., for pickers, roving and slashing machinery.

The Millneer Co., Statesville, N. C., have concluded orders for machinery for their new plant, this contract having gone to the Whitin Machine Works.

The Merrimack Mfg. Co., Huntsville, Ala., will shortly install 40 additional spinning frames, these to come from the Saco-Lowell Shops, Biddeford, Maine.

The Wiscassett Mills Co., Albemarle, N. C., is preparing to receive machinery for their new mill during the coming summer.

The Woodlawn Mfg. Co., Mt. Holly, N. C., have placed an order for 6 cards.

W. W. Glenn and associates, of Gastonia, N. C., will build a new mill at that point, and have placed orders for machinery.

The Fort Mill (S. C.) Mfg. Co., is planning to receive about 10,000 spindles, with accompanying machinery at an early date.

The Kershaw (S. C.) Cotton Mills have placed order for additional picker and roving machinery.

Elk Cotton Mills, Fayetteville, Tenn., have placed a large order for machinery with the Whitin Machine Works, for delivery this spring.

The Edenton (N. C.) Cotton Mills are planning to receive new machinery, a part of it is coming from the Whitin Machine Works, and a part of it from the Saco-Lowell Shops. They expect to have this in operation in the early summer.

The Newnan (Ga.) Cotton Mills have recently placed an order for a full line of pickers.

Several of the Texas mills are placing orders for machinery among these, the Corsicana Cotton Mills, Denison Cotton Mills, Postex Cotton Mills, Dallas Cotton Mills, and Dallas Waste Mills.

The Covington (Ga.) Mills have just placed an order for a large quantity of machinery with the Saco-Lowell Shops. They have also just installed a new press made by the Economy Baler Company.

The Pickett Cotton Mills, High Point, N. C., have recently purchased 1024 spindles and 32 Stafford automatic looms.

New equipment comprising 1,920 additional spindles, with accompanying machinery has been purchased by the Watts Mfg. Co., near Taylorsville, N. C. They now operate 3,200 spindles on 16's skeins and 30's cones.

The Irene Mills at Gaffney, S. C., have just equipped their mill with 150 wire window guards which were furnished by the Chattanooga Iron Works, Chattanooga, Tenn.

Work on the new plant of the Hawthorne Spinning Mills, at Clover, S. C., is about to begin. Building materials are now being gathered at the mill site, and it is expected that work will begin at an early date. This mill was promoted and organized by M. L. Smith, Secretary & Treasurer of the Clover Cotton Mfg. Co., and associates. The capital stock is $500,000.

The Linn Mills Co., Landis, N. C., has definitely determined upon an addition to their mill which they have had under contemplation for some time, and construction work will be started in March. The new building, when finished, will contain about 3,900 spindles, thereby increasing the total spindlage of the mill to 9,812. The product from the new spindles will be 4's to 16's yarn.

The St. Paul's (N. C.) Cotton Mills Co., has placed an order for additional machinery to increase their equipment from 7,000 to 12,000 spindles. A new mill building will be erected at once. The stockholders of this company recently authorized a semi-annual dividend of 5 per cent.

The new mill to be built at Mountain Island, N. C.

(near Charlotte) will be called the Adrian Mfg. Co. The incorporators are C. E. Hutchison, of Mt. Holly, and J. H. Cutter, Paul H. Allen and I. C. Lowe, of Charlotte. Fine yarns will be made. Contracts for the major portion of the machinery have been placed with the Whitin Machine Works, through their southern agent, Stuart W. Cramer, of Charlotte.

The Caraleigh Cotton Mills at Raleigh, N. C., have contracted with The Sanitary Engineering Company at Charlotte, N. C., for fifty individual septic tank outfits to equip the entire mill village.

E. W. Hundley, of the Golden Belt Mfg. Co., at Durham, N. C., says business was never better. This plant is turning out approximately two million tobacco bags daily.

The Clayton (N. C.) Cotton Mills have just completed painting the houses in the mill village and have made a number of other minor improvements.

The Highland Cotton Mills at High Point, N. C., have recently started operating at night.

The Rochester Overall Mfg. Co., Rochester, Ky., is being organized and will be in the market shortly for machinery for this class of goods. They also desire to employ a competent foreman.

The Inverness Cotton Mills at Winston-Salem, N. C., are doing a good business, and have recently installed 24 wide automatic Stafford looms.

The Hanes Spinning Mill at Winston-Salem, N. C., is being doubled in its capacity.

The dam at the Saxapahaw Cotton Mills near Graham, N. C., was washed away in a recent high water and the mill closed down until it can be repaired. This work is being prosecuted, and the mill will soon be again in operation.

Superintendent C. C. Cobb, of the Ella Mfg. Co., at Shelby, N. C., advises that the recent rumor that the Ella Mills expected to build a new mill and equip it for fine work was an error. He says that his company has never authorized such a statement.

The Gibson Mfg. Co., Concord, N. C., has let a contract to the Sanitary Engineering Company, of Charlotte, N. C., for the installation of 100 modern sewage disposal tanks to be installed at each of the operative's houses in the mill village in Concord.

The Gem Cotton Mills at Gibsonville, N. C., are reported as doing a good business and making a number of general improvements. They have recently purchased two Entwistle warpers.

The Travora Mfg. Co., at Graham, N. C., are doing some general overhauling and repairing at their plant. Business is reported as being good.

The Edna Cotton Mills at Reidsville, N. C., have recently installed 100 Stafford automatic looms. They are having a good business and running full time.

The Summerville (Ga.) Cotton Mills have been forced to put on a night crew, and it is said that with the mills running day and night the mill cannot catch up with the orders before Christmas. Sixteen additional houses for the employees will be built immediately.

The Wampum Cotton Mills, Lincolnton, N. C., have enlarged the mills to the extent of one story by excavating under the building and putting down a concrete floor. This makes a room of 75 x 200 feet. This new room is used for the coarse department of the mill. All of the machinery used to make 20's to 30's is on this floor. The other part of the building is used for the fine yarn department. The Wampum Mills make a high grade combed peeler yarn 50/2 to 80/2 and has enjoyed a prosperous business for the past eight years under the superintendency of Milton Ensor, who has succeeded in keeping the mills running on full time regardless of slow market conditions such as prevailed a few years ago. Since the addition, this mill has 14,000 spindles and 6,000 twister spindles.

The Berryton (Ga.) Mills will, it is understood, practically double the capacity of the present mills, and sixty new dwelling houses for employees will be erected at an early date.

The Gate City Cotton Mills, Atlanta, Ga., have just ordered a new baling press from the Economy Baler Co.

The Clinton Cotton Mills Co., at Emporia, Va., have not yet started making yarn. Considerable of the machinerl at this mill was moved from the Hoboken, N. J., plant of the company, and consisted largely of looms, etc. It is reported that they expect to install 5,000 spindles and the preparatory machinery therefor, within a short time. The mill will be motor driven, and it is expected will be in a position to start by August.

It is reported that the Erlanger Cotton Mills at Lexington, N. C., will build a yarn mill containing approximately 5,000 spindles and the necessary preparatory machinery to make yarn for the manufacture of the cloth used in the B. V. D. underwear manufactured by this mill. It is said that they now purchase yarn from approximately 5,000 spindles.

Rumors are afloat that a new 10,000 spindle mill to manufacture fine combed yarn—80's to 100's and up—is to be built at, or near, Marion, N. C., to be operated in connection with some of the present mills in that vicinity. No authorized statement has been made by the men supposed to be interested.

New England Mill Situation.

The labor situation in the mills of New England is still an unsettled one. The unions of New Bedford have voted to strike for a further advance in wages and have not set a time when they will call the workers out. The unions have also sanctioned a strike in the Gosnold mills of New Bedford which is now going on. Both manufacturers and unions claim to be satisfied with the progress made in conducting the Gosnold trouble which has to do primarily with higher wages for some of the employees.

The manufacturers of New Bedford are very united in the matter of declining further wage advances at this time. What they will do if a strike actually occurs cannot be foretold, although their present intention is to fight the demands to a finish. Manufacturers all over the section are looking to the New Bedford manufacturers to maintain a stand against forced advances from the labor end, yet conditions are very much against manufacturing interests. The supply of labor is limited and is not being augmented as usual through immigration. The drain from other industries increases, and with the approach of good weather, after a busy winter, the desire for summer vacations is expected to still further restrict the labor supply.

In the meantime the demands for the products of the

mills are very broad and active. Business has seldom been better and prices offer a profit even in the face of the abnormal costs of production. The weak spot in print cloth markets has been absorbed to some extent and the stocks of goods at Fall River are declining as a consequence of a steady spot demand, and slowly increasing contracts. At the present time the Fall River mills have less than a million and a quarter pieces of all kinds of odd goods on hand and the mills are closely sold ahead for March delivery.

Staple prints have been advanced to a basis of 6½ cents a yard, which is within ½ cent a yard of the top prices paid in 1907. The demand for printed goods is very active and the large printers are as busy as they can be. They are not offering fast colored goods in all instances, owing to the scarcity of dyes, but buyers are now willing to accept the cloths they can get, and they are quite willing in a number of instances to pay the high premiums which absolutely fast colored goods command. The fine goods printers have more work offered than they can handle and many of their spring lines have been withdrawn through inability to accept further repeat orders for this season.

There has been a good business done on printed flannelettes for the fall season and the printers who specialize on these goods have been able to pick their orders. Anything in dark colors commands a special premium. Printers of cheap robes are not accepting business freely owing to the dissatisfaction that may arise from the use of fugitive colors. On the finer qualities of printed upholsteries, printers have all the business they want or can take care of. The demand for fancy prints of the finest qualities is excellent, and the larger printers are not able to take on any new customers. In fact they are having difficulty in meeting the demands of their regular trade.

Bleached cottons have advanced during the month. The bleacheries are very busy indeed, some of them making a record output. Fruits are up to a basis of 9 cents for the 4-4 goods. Berkeley cambrics and longcloths were advanced twice during the month and are very scarce for quick delivery. India linons are selling at the best figures they have brought since 1907 and bid fair to go higher, although they are already up more than 2 cents a yard on a basis of finished 30 inch 88 x 80s. The scarcity in long cloths and fine bleached shirtings accounts for a premium of ½ cent a yard some cloths are bringing for spot delivery. The shirt and underwear trade needs goods faster than they can be supplied.

There has been a decided improvement in the tone of ginghams and goods of gingham construction in the past few weeks. Prices are up and they are approaching the top reached in any recent year. Staple ginghams are selling at 7½ cents, the highest point reached in recent history and mills are not able to deliver all the goods jobbers will take at the new price. Dress ginghams have been advanced to a basis of 8½ cents for the lines that usually sold at 7½ cents and the rush to get them for repeat orders suggest a great scarcity in many jobbing stocks. Anything available in fine plaids bring fancy prices for quick delivery, especially the fine combed yarn lines of plaid goods.

The Amoskeag Manufacturing Company announced its price on shirting chambray, fast blues, on the 21st inst., and that has given the trade a great deal of confidence in values. The new price is 8½ cents compared with the very low price of 6¼ cents last year. The same price holds on the bleached madras lines used largely in the working shirt and romper trades. Even at the new high prices cutters do not balk. They will have to advance the price of working shirts so that they will sell out of the established 50-cent retail price range, but some of them are welcoming this phase of the conditions brought on by the war, as they say those goods always sold too cheap and were hampered in sale by the retailers' desire to feature the goods at 50 cents retail, instead of getting a fairer value for them.

It is quite probable that it will be easier for the workingman to be insured of a fast colored shirt than for the user who wears his $2 to $5 shirt in high colors. The mills making the coarser and cheaper fabrics have been conserving their fast colors for the mass products rather than for the fine and fancy trade which at best is limited. It is certain that many shirts now being prepared will not be sold under marks guaranteeing color. The laundries have become timid about the color situation and are notifying their customers that they will not be responsible in future for any goods destroyed in the laundering processes.

There has been no let up in the volume of business tendered on fine and fancy cottons. Mills all over New England have all the orders they can handle, whether in fine carded yarns, or in fine combed goods. Spot deliveries of voiles, poplins, piques, lawns, and other fine staples command a premium and many converters are placing orders that will run all through this year. One large mill is reported to have sold all the india linons it can make for 1916, while another had to stop booking orders at its own price two weeks ago. The fancies are in very good demand, everything from a pajama check to a high novelty being wanted.

Some of the choicest novelties ever offered from American looms are being woven, in one instance a New Bedford mill having secured the services of a few choice skilled hand loom weavers for producing specialties in plaid effects. It is difficult for mills to get the fast colored yarns they need and more cloths for white goods are being prepared. The advance in raw silk, and in silk dyeing, has caused prices for silks and cotton to rise abruptly compared with a year ago. Buyers are not yet finding fault with prices, however, but they are clamoring for further deliveries of goods for spot and nearby distribution.

There is a full demand for bedspreads, plain and fancy towellings, and other heavy cloths. One of the features of interest is the large demand for heavy goods for skirtings, anything from a fine fancy pique to plain 2.50 sheetings, being called for to be finished for suitings and skirts. Owing to the dearth of fast colors, it has not been possible for converters to offer a full line of fall cottons for dress purposes, but the mills that have offered anything in the way of oxfords, basket weaves, striped piques, or other cloths that lend themselves to satisfactory piece dyeing, have booked all the business they could take. Prices on many of these goods show advances of 20 per cent over the prices asked three or four months ago and they are tending upward, especially where yarns to be mercerized are wanted in the cloths.

The very satisfactory outlook for a broad market for napped goods for fall, which was referred to early in the year, has been more than justified in the results shown on

the books of large corporations in Lowell, Nashua, and elsewhere. They have all the earmarks of good profits arising from a full demand stimulated by scarcity. Flannellettes, domets, canton flannels, and cotton blankets have never been better sold at this time of the year than they are today, some of the largest mills not being able to take another order for delivery this side of October or November.

The demand for goods for export has not lessened. Some mills have determined to make the export business a permanent factor regardless of the momentary prosperity in the domestic markets and they are entering heartily into new plans of agents for packing and making up goods in the way foreigners want them. The South American trade has been especially satisfactory in a number of instances, while the West Indian trade has been excellent. Canadian business is also proving satisfactory and it is being catered for even in the face of the very high prices ruling in domestic lines.

The machine shops of New England have never been busier than they are today. All the large cotton mill shops have plenty of work for months to come. Additions to old mills and many contemplated new mills, have put the machinery owners in a strong position, as the machine shops will not be able for months to make any perceptible increase to new working plants.

Concerning the general outlook, there is no change in sentiment among cotton manufacturers. They believe firmly in a broad prosperity as long as the wars in Europe go on. While prices on goods and yarns are admittedly high, they do not see any early prospect of a decline when scarcity in merchandise is so plainly evident in the markets. Now that buyers are beginning to take the best colors they can get, the mills expect to keep running.

The Yarn Market.

During the past month the yarn manufacturers have shown undiminished confidence in the situation and have kept their prices either stationary or gradually rising. The first of the month found combed yarns in demand for prompt delivery, with prices high but irregular. At this time there was also a growing belief on the part of the knitters that the prices of carded knitting yarns were at the top and they were therefore withdrawing their offers and holding off wherever possible. There was some slight weakening of carded yarn prices during this period, but it was nothing definite, and only occurred in spots. This period of easier prices continued on toward the middle of the month, and while there was considerable demand for carded knitting yarns for prompt deliveries, there were comparatively few sales for future deliveries.

The combed yarn situation became somewhat more tense as the middle of the month approached, prices climbing higher and many numbers becoming very scarce for prompt deliveries. Weavers were feeling the effect of the dyestuff situation, and in spots weaving yarn prices were softer.

The close of the month finds combed yarn prices strong, and spinners asking advances for future deliveries. For example, Southern spun 50's 2-ply combed peeler lisle on cones were quoted at 59 cents, and 60's 2-ply lisle at 65 cents for June delivery. Buyers are scouring the market for bargains, and occasionally they are able to pick up small lots at what are now low prices. In spots there is a good demand for single combed yarn, but there seems to be a wide variation in the prices quoted. The demands range from 16's to 60's, but principally from 16's to 30's.

Southern frame spun carded cones are quoted on a basis of 21 and 21½ for 10's. While the demand is not as active in these lines as in the 2-ply combed line and the mercerizing twist, still some very good sales are being made. Weaving yarns continue to hold their high level, and while some buyers do not believe that these prices can continue, there seems to be no immediate recession in view.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	18½ @19½	10s	20 @20½
14s	21½	16s	21½ @22
20s	22 @22½	24s	23½ @24
26s	24 @24½	30s	28½ @29

Southern Single Warps.

8s	19 @20	10s	20 @20½
12s	20½	14s	21
16s	21½	20s	22
24s	24 @24½	26s	24½ @25
30s	29 @29½	40s	30 @37

Carpet and Upholstery Yarns in Skeins.

8-4 slack	20 @20½	9-4 slack	20 @21
8-3-4 hard twist	18½ @19		

Southern Two-Ply Skeins.

8s	20 @21	10s	20½ @21
13s	21 @21½	14s	21½ @22
16s	21½ @22	20s	23½
24s	26½	26s	27
30s	29 @29½	40s	37½ @38
50s	47 @48		

Southern Two-Ply Warps.

8s	20 @20½	10s	21 @21½
12s	21½ @22	14s	22½ @23
16s	23 @23½	20s	23½ @24¼
24s	26½ @27	26s	27 @27½
30s	27 @27½	40s	38 @39
50s	47 @48		

Northern Two-Ply Carded Peeler Skeins.

20s	27 @27½	24s	28½ @29
26s	29½ @30	30s	32 @32½
36s	36 @37	40s	40 @42
50s	48 @49		

Two-Ply Combed Peeler Skeins.

20s	31 @32	24s	33 @34
30s	38 @39	40s	44 @47
50s	55 @57	60s	63 @65
70s	69 @71	80s	78 @80

Southern Frame Spun Yarn on Cones.

8s	19 @20	10s	19½ @20½
12s	20 @20½	14s	20½ @21
16s	21 @21½	18s	21½ @22
20s	22 @22½	22s	22 @22½
24s	23 @23½	26s	24 @24½
30s	26 @26½		

Northern Mule Spun Carded Yarn on Cones.

10s	21¾ @22½	12s	22 @23
14s	23 @23½	16s	23½ @24½
18s	24 @24½	20s	24½ @25
24s	25½ @26	26s	26 @26½
30s	29 @29½	40s	36 @37

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	28½ @29	12s	29 @29½
14s	29½ @30	16s	30 @30½
18s	31 @31½	20s	31½ @32
22s	32 @32½	24s	32½ @33
26s	33½ @34	30s	35 @37
36s	39 @39½	40s	41 @43

1816—1916.

The Draper Company, of Hopedale, Mass., are sending out a beautifully engraved card of greetings to their friends on this, the one hundredth anniversary of the year of the founding of their business. Their many mill friends will join heartily with COTTON in wishing for this firm continued success and prosperity.

Walter R. Hills, representing the Masury-Young Company, of Boston Mass. is now making his 15th trip among the Southern cotton mills. The specialties made by this concern are Loom Lubrik, Myco Twister Ring Grease, Removoil, Non-Fluid Oil, sizes, disinfectants, etc., all of which have been used for many years by large cotton mills, both North and South.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, February 19th, 1916.

Reports of indications for a large increase in the cotton acreage in Texas and Oklahoma this year, liquidation of the long interest in March in advance of notice day and unfavorable political developments, coupled with no improvement in the export situation, occasioned a decline in values of about $5 per bale the past month.

It is claimed that as a result of the want of sufficient rainfall this winter in the Southwest, especially in West and Northwest Texas, and owing to the recent hard freeze in Texas, about 50 per cent of the wheat and oats crops have been killed. Therefore, it has been taken for granted that nearly all of this land will be planted to cotton this year, making it probable for the increase in the cotton acreage west of the Mississippi this year to be larger than originally intended. This feature had a depressing effect on market, and was followed by rumors to the effect that tenders on March contracts, on the 24th inst., would likely be large, which influenced extensive liquidation and a still lower level of values.

To cap the climax the controversy between Germany and the United States assumed a more serious aspect, as Germany and Austria have proclaimed to the world that they intend to attack armed merchantmen after February 29th, to which action the United States government is objecting, claiming such a move would be in violation of international law. This development unsettled the market all the more, prices declining to the lowest level reached for several months past, as it was realized that if Germany and Austria live up to their intentions, marine insurance would advance further, and the scarcity of tonnage would likely become more acute.

Under the circumstances the future course of values will likely be governed principally by developments in international politics, making opinions for the present valueless.

If the two governments, Germany and the United States, could arrive at some satisfactory understanding as regards the method by which under-sea warfare is to be conducted in the future, the market would likely experience a big reaction, as the technical position is stronger by reason of futures being being at a big discount compared with spot values, and because the long interest has been reduced materially, while it is evident that a large speculative short interest has accumulated.

Of course, if Germany persists in living up to her intentions to attack armed merchantment after February 29th, the export situation would become more complex, making shipping to Europe more difficult.

A clearing of the political atmosphere would mean much to the interests of the South, as the demand for cotton goods of every description throughout the world, especially in America and England, where they are available in larger quantities than elsewhere, is so urgent that the mills are unable to fill orders for immediate delivery.

A peculiar feature of the situation is located in the fact that while the price of raw cotton has declined about 2 cents per pound, or $10 per bale during the past few months, manufactured goods have advanced steadily until they are now quoted at the highest prices in several years past, and spinners are reported to be working on a very profitable margin in consequence.

Today the world's visible supply of American cotton is 1,624,000 bales smaller than last year—4,280,000 vs. 5,904,000, of all kinds figuring 5,839,000 against 7,361,000 one year ago.

In contrast with the advices from west of the Mississippi river, reports from Alabama and the South Atlantic states are to the effect that there will be little or no increase in the acreage, perhaps a decrease, and it is said that there will be a considerable reduction in the use of fertilizers.

Some Interesting Installations.

William F. Taubel, Inc., of Riverside, N. J., has contracted with the Permutit Company of New York, for a "Permutit water purifying and softening plant, having a capacity of 500,000 gallons per day. This plant, which is according to the latest and most improved designs of the Permutit Company, consists of a large concrete settling basin, purifying filters and "Permutit" water softening filters. It is expected that the plant will be in operation within three months as work on it will commence just as soon as the frost is out of the ground.

T. A. Harris Company, Continental Dye Works, of Philadelphia, Pa., have also contracted with the Permutit Company for a "Permutit" water softening filter, having a capacity of 100,000 gallons per day. This filter will handle the entire amount of water used at their establishment for the various forms of dyeing done by these people.

"Permutit" water softening filters contracted for some little time back by the Thurlow Worsted Mills of Chester, Pa., and the Richardson Silk Mill of Belding Brothers & Company, of Belding, Mich., are now in course of erection and will be in operation within a very short time.

For some little time rumors have been circulating to the effect that shipments of S. K. F. ball-bearings from the factory in Sweden to this country had been unreasonably delayed or suspended. Elliott A. Allen, the textile expert of the S. K. F. Ball Bearing Company in this country, who is now traveling among the textile mills of the South, advises that this rumor is entirely erroneous. S. K. F. ball bearings are still coming into this country, the receipt being full and complete. They are being held up in England for inspection only, this delay being temporary in nature and in no wise hindering the company in making deliveries of this now well known and highly appreciated product.

"Wagon and Truck Loaders" is the title of a new catalogue issued by the Link Belt Company of Chicago. This catalogue describes and illustrates apparatus for handling coal, coke, stone, sand and similar loose material for storage. The 64 pages of this catalogue form an interesting encyclopedia on the subject of portable loading machinery. It describes a novel useful and comparatively inexpensive method of handling material, and interested manufacturers will doubtless find many uses to which such machines may be put by a careful perusal of this free treatise. Ask for Book No. C 250.

COTTON MANUFACTURING.

Designs for Fancy Cotton Fabrics.

BY THOMAS WOODHOUSE AND JAMES IRELAND.

PART TWENTY-SEVEN.

An exceedingly pretty and unique cloth is illustrated in Fig. 119. The warp contains 114 threads per inch of biscuit color, and there are 64 picks per inch of filling of

FIG. 119.

the same color. One repeat of the design, which occupies 118 threads and 64 picks, is illustrated in Fig. 120. The distorted appearance of the design is due, as will be quite well understood, to the use of perfectly square design paper for a cloth in which the number of threads per inch exceeds the number of picks per inch. The ground weave of the cloth is the 2/2 rib or repp weave, and the close setting of the warp threads shows up the weave to the best advantage; as a matter of fact all rib weaves require somewhat similar treatment.

The large hexagonal figures, which form one of the main features of the cloth, are arranged in a diamond form, that is as a drop pattern, and each figure is made up of adaptations of the 4/4 basket weave. The floats in this weave are obviously 4 of warp and 4 of filling, but it requires a group of 10 threads to preserve the approximate square draft board effect which is characteristic of all basket or hopsack weaves. According to the relative number of threads and picks per inch there should be, to be exact:—

4 picks in weave $\times$ 144 threads per inch $\div$ 64 picks per inch $=$ 9 threads of warp in the basket part to form perfect squares.

In the design in Fig. 120, the hexagonal basket weave occupies the central part of the design, while the alternate and similar hexagonal pattern, which is necessary to add to form one complete unit, appears in the corners and is represented necessarily by four sections. Each pair of heagonal basket figures are joined together by bands of filling which twill to the right or to the left according to the positions of the two figures which require to be joined.

An elegant little figured effect appears on the rib ground in the middle of what seems to be an octagonal area. The little figures are in the form of a diamond composed of four triangles. Two of these triangles are developed by the warp threads, and the remaining two by the filling picks; in both cases the triangles developed by like yarns are obviously diametrically opposite to each other.

The two parts marked C and D in Fig. 120 join to form one of the above diamonds of four triangles. Similarly, the two parts marked E and F form the other similar figure. A design such as this, although of a geometrical nature, is beyond the compass of an ordinary dobby machine; in fact there are so few threads in this design

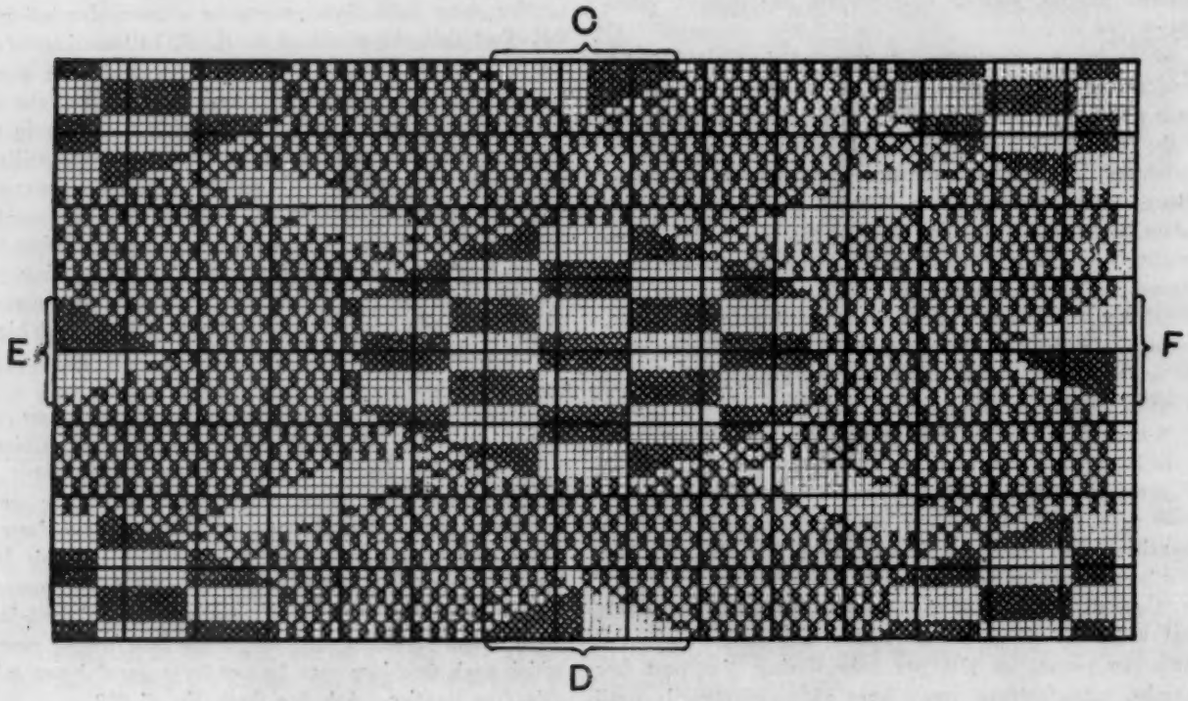


FIG. 120.

which weave in the same order that it would be unwise to attempt to reproduce it in cloth with a draft on the minimum number of harnesses. It would be much more satisfactory to employ a jacquard machine for this work. It has been mentioned that dobbies are made which contain different numbers of needles and hooks, or their equivalents, according to the class of material to be woven, and according to the general figuring capacity demanded by the cloths in any particular industry. In very much the same way jacquards vary, the most common being what are known as 200s, 300s, 400s and 600s machines, indicating that they are capable of giving results in fabrics which demand for

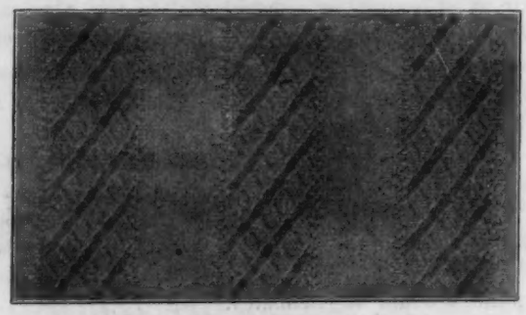


FIG. 121.

each unit, the use of 200, 300, 400 and 600 different orders of interlacing. The most economical size or sizes used in any particular factory will clearly depend upon the class of designs that are made. The cloth under notice in Fig. 119 could be woven in a 200s jacquard, but since there are only 118 threads in one unit as illustrated in Fig. 120, there would be 82 needles and hooks to remain idle, i.e., to be cast out. 200 — 118 = 82 hooks and needles in operation.

If, however , the cloth under consideration were a wide one, it might be advantageous to use a jacquard machine of a larger capacity. No hard and fast rule can be observed for such work, but it is a common and an economical practice to use as small a jacquard as possible for the sake of

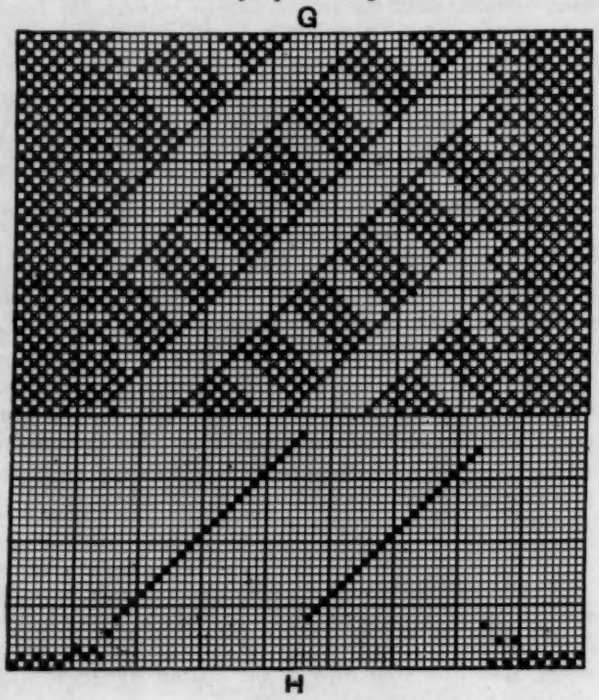


FIG. 122.

keeping the cost of cards at a minimum. It is obvious that an increase in the size of a jacquard means a corresponding and proportionate increase in the amount or rather the weight of cards used, provided the pitches of the machine are the same. On the other hand, the jacquards used are almost invariably large enough to weave the largest pattern desired in the factory, unless two or more differently-sized machines are employed for the sake of accomodating various sizes of designs. If a small jacquard be employed and the cloth comparatively wide, the number of harness cords to each hook may be excessive and impracticable. For example, in the cloth illustrated in Fig. 119, there are 118 hooks required for one repeat. Now the cloth contains 144 threads per inch, therefore if it were 36 inches wide there would be 144 threads per inch×36 inches wide÷118 threads per repeat = approximately 44 repeats, that is, each hook would require to carry 44 harness cords.

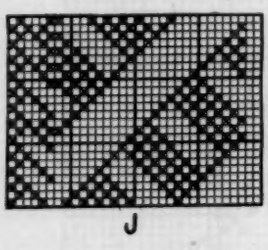
The following table shows how the various machines mentioned would have to be arranged to weave this pattern:

Capacity of Jacquard.	Number of Repeats.	Total Number of Hooks Used.	Number of Hooks Left Idle.
200	1	118×1=118	82
300	2	118×2=236	64
400	3	118×3=354	46
600	5	118×5=590	10

The number of harness cords controlled by each hook in the four different machines and for the 36-inch cloth under discussion would be:—

Capacity of Jacquard.	Total Number of Threads.	Total Number of Hooks Used.	Number of Cords per Hook.
200	5184	118	43 and 44
300	5184	236	21 and 22
400	5184	354	14 and 15
600	5184	590	8 and 9

If a large range of patterns have to be woven on the same loom, the adoption of one type of large machines may be more economical than the use of small machines, but if, on the other hand, there is a probability of a long run on the same pattern, it may be advisable to adopt the smaller type of machines. In no case, however, is it wise or practicable to have an excessive number of cords per hook. There are so many varying conditions arising in general that it becomes impossible to have a fixed rule to suit all requirements; hence the person in charge will be called upon to consider which type is expected to prove most economical and useful for the particular factory in which his business calls him.



A very pretty stripe pattern is shown at Fig. 121. Both warp and filling are white, and there are 104 threads and 72 picks per inch respectively in the finished fabric. The complete design unit consists of 100 threads and 24 picks. Of these 100 threads, the plain stripe embraces 42 , the remaining 58 being used for the fancy stripe. The complete design for the fancy stripe, together with seven plain threads on each side of it, is shown at G in Fig. 122. Two repeats in the way of the filling have been made in order to illustrate the design to advantage. The broad prominent bands which run diagonally across the figured stripe

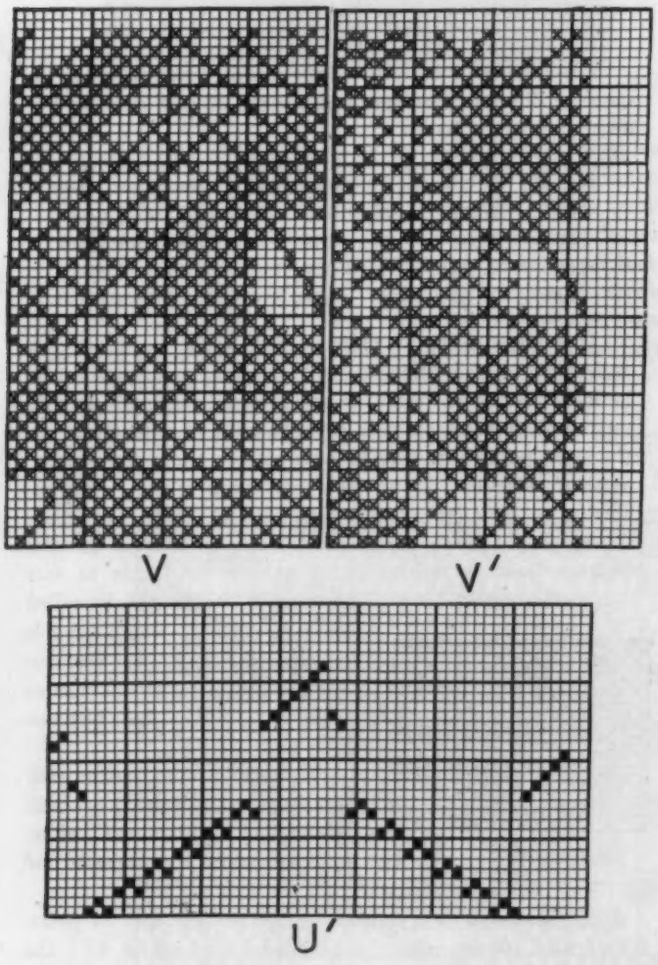
are developed by the filling, and so are the oppositely directed, but shorter twills, which appear between each pair of broad bands. The narrow neat effect at both edges of the stripe gives a beautiful finish to the cloth, and tones down the junction between the two contrasting parts. A contrast is often desirable and almost necessary to emphasize both sections of many designs, but in this case the general effect is undoubtedly improved by the addition of the elegant edging.

The draft at H, Fig. 122, and the weaving plan at J show that 30 harnesses and 24 picks per round are required to weave this cloth. Of these 30 harnesses, 28 are for the fancy stripe and 2 for the plain stripe, although it is quite possible that 4 harnesses may be employed for the plain section.

(To be continued.)

Erratum.

On page 71 of the December issue of COTTON, a slight omission in the weaving plan V, Fig. 114, escaped our notice. A few marks of the plain weave were, unfortunately, left out. The real weaving plan, for the comparatively simple



draft shown at V in the above issue, is that marked V in the present issue.

The same design T, Fig. 114, may, however, be reduced to a smaller number of harnesses as illustrated here at U¹, in which case the weaving plan would be that shown at V¹ in this issue.

The Authors.

A Useful Card Room Device.

It is a matter of common experience in the card room that after the cards have been in use for some years the chains carrying the flats become sufficiently worn in the links to allow the flats to hang away from the discs, or blocks, at the front of the card, thus causing the wire to rub on the top of the stripping plate, which projects up between the flats and the cylinder, and which is made adjustable for the purpose of regulating the amount of strip taken off by the flats.

The continued rubbing of the wire over the stripping plate is of course very detrimental to the wire and to overcome this many mills have planed off the top of the plate so that the wire can not rub against it; and in so doing have destroyed this adjustment, making a fine regulation of the strip impossible.

Furthermore, when the flats hang away from the discs the flat stripping comb strikes against the wire and there is injury to both the wire and the comb. It is obvious that if the flats were in absolute contact with the discs, as they were when the card was new, both of these injurious conditions would be eliminated.

The usual outward adjustment of the blocks to tighten the chains, taking out one or two flats, or any method by which the tension of the chains is increased does not bring the flats back to an absolute contact with the discs when the chains are badly worn, and in fact the greater the tension on the chains the faster they will wear, until the distance between the lugs of the flats is greater than the pitch of the sprockets driving them.

When this stage was reached it has been customary to buy new chains, but by means of a recently patented device a permanent repair is made that allows the indefinite use of the old chains no matter how badly they may be worn, and overcomes the injurious conditions mentioned as the flats are kept in absolute contact with the discs, however slack the chains may be between the front and the back of the card. This is accomplished by having the teeth of the sprockets driving the flats contact with them only at the top of the discs and pulling them instead of pushing them around the discs as in the usual construction. This device is furnished by Morton & Andrews of Lowell, Mass., is easily applied in the mill and costs less than one-third as much as replacing the chains.

Any textile manufacturer that looks for improvements in sizing and finishing or meets with any difficulty in this respect will find it worth his while to turn to the Arabol Mfg. Co., 100 William St., New York City, for help. Scientific specialization, long and widespread experience, modern equipment in factory and laboratory have prepared them to cope with every condition. The progressive spirit which has made them continually increase their staples has given valuable assistance to the advancement of American textile manufacture.

Here's a 96-page book on belts that you may have for the asking. Transmission problems and the care of belts fully discussed. Ask the Graton & Knight Mfg. Co., Worcester, Mass., for your copy of the Belting Manuel C 3-16, giving name of mill and position.

The Hunter Agitating Dryer.

A unique raw stock dryer of the agitating table type is thoroughly illustrated and described in Bulletin No. 82 of the James Hunter Machine Co., North Adams, Mass.

This dryer is of all steel construction, the panels being double with the air space filled with asbestos insulation. The cone fans are mounted on S. K. F. ball bearings and circulate the air heated by unit steam coils causing the heated air to come in contact with the material on the agitating apron, thereby converting the moisture contained in the stock into vapor. The exhaust fan removes this vapor while the material conveyed by the table is in a constant state of agitation so that each particle of stock comes repeatedly to the surface, thereby being subjected to the same temperature and volume of air as every other particle, resulting in even drying and lofty stock suitable for a better quality of product in future operations.

The all steel construction of this dryer makes it absolutely fireproof so far as the machine itself is concerned. The frame is rigidly made from steel angles securely riveted. Panels which contain the asbestos insulation fill in both top and sides of the dryer and are made from No. 20 sheet steel. The double form with the dead air space or the asbestos insulation being used exclusively. The use of S. K. F., ball bearings for the fan bearings is only one example of the careful and thorough construction and attention to details which characterizes the entire machine.

The air ducts are of ample capacity and partitions are located between the sections to regulate and control the circulation of air. The arrangements of the heating coils on the unit system in the separate compartments at the side of the dryer allows a flexibility otherwise unobtainable. The automatic feeder is of special design, using hard maple apron slats mounted on link belting.

The drying table of this dryer is unique, inasmuch as it is made of No. 16 perforated sheet steel, flanged on the edges and reinforced on the ends with cold drawn steel channels.

The special features of this dryer claimed by the manufacturers are that the air currents pass upward through the stock; the plates have guides of vulcanized fibre and do not come in contact with each other; the driving mechanism is at the feed end and outside of the dryer; no revolving parts are located on the inside of the dryer on which the stock might collect in passing, while the stock on the outside is in a constant state of gentle agitation, thereby giving every portion of stock uniform treatment; and the table is self-cleansing, thereby preventing any mixing of colors.

Bulletin No. 82 also contans a number of reference tables for the mill man interested in drying problems.

HOSPITAL MANAGEMENT, published at Louisville, Kv., has made its appearance, a feature being a department for industrial hospitals. It is announced that this department will be a permanent feature of the publication, the idea being to record developments in the rapidly growing field of welfare work. The leading article in Hospital Management for February describes the hospital of the Youngstown, O., Sheet & Tube Company, which was recently opened with Dr. Sidney McCurdy in charge.

Lenos and Gauzes.

BY FRED W. HORROCKS.

Lenos and gauzes or crossed yarn fabrics are a class of cloths quite distinct from any other as regards weave, and require special arrangements in the weaving shed for their production. They are the lightest of fancy dress goods for women and children, and though requiring but little material are very durable owing to the peculiar weave employed.

Though the terms "leno" and "gauze" are often applied to the same fabric as if meaning the same, there is a slight difference between them, both in weave and appearance. A gauze cloth is one in which one or more ends cross from one side to the other of one or more ends, at one operation. A leno cloth is one in which the crossing requires two operations. A gauze cloth weave is complete on two picks, whilst the leno weave requires four picks to complete it.

Considering first the gauze weave: The simplest is that in which one end crosses one the first pick, and then crosses back on the next pick. This weave, however, is seldom attempted except when the very best yarns are used, as there is so much strain and friction on the yarn and healds. Better results are obtained when two cross two, and when the crossing takes place every second pick. A plain gauze weave consists of two ends, one known as the doup or crossing end, the other as the standard or stationary end. In a plain gauze weave the doup end is always on the same side of the weft, and the standard end is always on the other side of the weft.

In order to accomplish the crossing of the ends, a special kind of heald is required to be used in addition to a couple of healds of the ordinary type. This special heald is known as the doup heald. This doup heald is an ordinary heald with an extra stave, secured to which is a series of doups or threads, each of which is attached to a mail eye in the doup heald by being threaded through the mail eye and either the upper or lower coupling of the heald. In drawing the warp threads through the healds we must first considerer whether the doups are required to be over the yarn or below it. In most mills where gauzes are woven, the doup stave is below the yarn. When arranging the healds in the drawing-in-frame the two plain healds are placed at the back, and the doup heald at the front, with the doup stave hanging nearest the reed. The ends are then drawn in, first through the plain healds, then all the ends from one of the plain healds are taken separately and drawn through the loose doup or slip and then drawn through a dent in the reed along with its adjacent end. The whole arrangement, therefore, consists of two standard healds, a doup heald with stave and doups attached, and reed. One end is simply drawn through a standard heald and the reed, whilst the other end is drawn through the other standard heald, then through a doup slip, and then through the reed,—care being taken that the two ends are drawn in through the same dent. In weaving with bottom doups, the crossing of the doup ends takes place underneath, so that the cloth is woven wrong side up. In top doup weaving the cloth is woven right side up, and the doup slips on the doup stave are more easily attended to in case of breakage, etc.

Gauzes are generally woven in dobby looms, the best dobbies being those in which the ends are raised from

their lowest to their highest position every pick, though other makes of dobby can be used. For the simplest gauze cloths only four jacks of the dobby are required, two for the standard healds, one for the doup heald, and one for the doup stave. In addition, a jack of the dobby would be required to operate the vibrator rod over which the crossing yarn passes. In most cases the doup yarn or crossing yarn is on a separate beam, the ordinary or standard ends passing over a fixed rest, whilst the crossing ends pass over a vibrator rod or movable back rest.

In weaving gauze cloth there are two kinds of sheds—the open shed and the crossed shed. In a loom with a bottom doup arrangement, for one pick, the loose doup stave and the doup standard heald will be raised, thus giving an open shed. For the other pick the whole doup heald with the doup stave is raised, whilst both standards are down. This causes the doup end to be crossed round the stationary end in the shed, and probably one or both would be broken if the vibrator rod over which the doup yarn passes were not slackened.

A leno cloth is somewhat more like a plain calico than is a gauze cloth. In a gauze cloth, the doup or crossing end is up at one side of the standard end for one pick, and is up at the other side for the next pick, the standard end being stationary. In a leno cloth, however, the standard end is raised alterately with the doup end, and so produces a crossed yarn fabric, but of a plainer weave than a gauze. In a leno there are thus four picks in one repeat, whilst in a gauze there are only two. Leno weave:—First pick. Open shed; doup standard and doup slip raised. Second pick. Plain shed; back standard raised, doup end down. Third pick. Crossed shed; doup heald and slip raised, back standard down. Fourth pick. Plain shed; back standard raised, doup end down.

In the leno there is, therefore, only one crossed shed in four picks, as compared with one crossed shed in two picks of the gauze, and the crossing is performed in easy stages. A leno weave is more suited to fine or weak yarns than is a gauze weave, and managers often find it advisable to change the weave from a gauze to a leno when faced with this difficulty.

These goods are generally woven by means of dobby machines. For lenos and gauzes the simplest dobby machines are the best; those of the single-lift type being used in most cases. In the case of open shed dobby machines being used, additional mechanism in the shape of shakers to enable the doup end to cross are required.

Some firms prefer top doups to bottom doups. Top doups are better for net leno fabrics, in which there are extra warp ends of a coarse counts crossing ends which weave plain. By using top doups we are enabled to see the pattern better; with bottom doups the cloth is being woven face down, and faults cannot be easily seen until the cloth is on the roller.

"Optical instruments for the Inspection and Testing of Materials," is the title of a recent catalogue sent to the trade by Bausch & Lomb Optical Co., of Rochester, N. Y. This catalogue is of particular interest to textile readers because it describes somewhat at detail the Stormer viscosimeters and suitable microscopes and other instruments for commercial laboratory work. A copy of the catalogue may be secured gratis on application.

Mogul Shurlok Socket.

For a long time the trade have demanded a mogul base socket from which it is impossible for an unauthorized person to remove the lamp. This demand has been met by Pass & Seymour, Inc., the number of it is P&S 597 Shurlok. This socket is fitted with the double Shurlok device which holds the lamp base rigidly without in any way distorting

the base of the lamp, thus the lamp remains straight. The ease with which the lamp may be locked or removed by the proper person is the talking point in favor of the installation of these sockets wherever a high efficient unit is desired to be permanently located. It is not so much the loss of the lamp itself as it is the fact that the space to be illuminated will be left in darkness should the lamp be removed or stolen. Therefore the value of this device is to prevent the removal or theft of lamps.

Looking forward to the close of the European war conservative mill men may well consider their weave room conditions and whether or not they can meet competition, either foreign or domestic," says COTTON CHATS in a recent number.

"It has repeatedly been demonstrated that Northrop looms produce more yards per annum than common looms; it is clear that continuous operation of the looms due to the automatic features of the Northrop filling battery will produce more cloth per annum than common looms which are stopped for bobbin replenishment by hand from 75 to 300 or more times per day—(say 600 to 2500 times per weaver per day on an eight loom set).

"Consider for a moment the following extracts. In the percentages of product, 100 per cent represents a continuous operation of the looms for regular mill hours.

"At a mill with about six hundred looms weavers were running 24 looms each on 40 and 44-inch, and 20 looms each on 60 inch; the mill runs through the noon hour and gets over 100 per cent production.

At a mill with over two thousand looms by running through the noon hour their production figured over 100 per cent figured on a basis of 60 hours per week.

'At a mill with about eight hundred looms the weavers run twenty each, getting 106 to 111 per cent production.

"At a mill with about thirteen hundred looms weavers run twenty to twenty-eight looms each; the weave room runs through the noon hour without weavers, getting about 110 per cent production.

"At a mill with about fourteen hundred looms, weavers run twenty to twenty-eight looms each. The mill runs through the noon hour and claims to get about 108 per cent production."

Dyeing, Bleaching and Finishing.

Dyeing Oxidized Aniline Black.

BY WILLIAM B. NANSON.

One of the many methods of dyeing aniline black on cotton is that known as the oxidation method. Unlike the direct or sulphur colors, the process is by no means an easy one and requires a dyer with *some* knowledge of dyeing to achieve good and successful results. In this process the cotton is immersed in a bath containing as its essentials, aniline salt, and potassium or sodium chlorate, after which it is dried and passed through a chrome bath. While a good black is thus obtained, a difficulty arises in the tendency of the cotton to become tendered from the use of too strongly acid solutions, or by the formation of oxycellulose caused by too rapid or too strong oxidation; then again, the color is apt to rub off through a too superficial fixation; also many aniline blacks become green, if not dyed properly, by exposure to the sulphurous acid fumes existing in the air. In order to get over these difficulties there is often added to the padding liquor a small quantity of aniline oil or ammonium chloride. Further experience has shown that a little copper sulphate has a good effect; it seems to reduce the tendency of the goods to go tender and it facilitates the production of the black by acting as an oxygen carrier between the sodium chlorate and the aniline salt.

Another improvement of late years has been discovered in the use of tartaric, acetic, lactic or formic acid both as an addition to the bath in acid form to replace some of the hydrochloric acid, and as a tartrate, acetate, etc., of aniline in place of the aniline salt. This has been a great improvement in the way that it materially lessens the danger of tender goods. Among the many uses to which lactic acid has been put, in England, is that of aniline black dyeing, not only as an acid but also as an aniline lactate. This last compound is readily prepared by mixing two pounds of lactic acid (50 per cent strong) with one pound of aniline oil.

An oxidation black liquor is made from 2 lbs. of aniline oil, 1½ lbs. of hydrohclorie acid, ¼ lb. lactic acid and 9 oz. of sodium chlorate, with sufficient water to make one gallon. After the goods have been passed through this bath, they are dried, hung in the aging room, then chromed, soaped and washed.

For a direct aniline black a liquor is made from 3 lb. of bichromate of potash, 2½ lb. of aniline salt, 3 lb. lactic acid and 1½ lb. of sulphuric acid for each 100 lb. of goods. The goods are worked in this bath in the cold for one hour, then the heat is slowly raised to 180 degrees F. and maintained at that temperature for one hour. The goods are next washed well, soaped at 170 degrees F. with 5 pounds of soap, washed well and dried. This latter recipe, being a one bath and not an oxidized black, may possibly rub off. The writer does not indorse these two recipes, but they are the latest developments of aniline black as used by the English dyers today. They look good however, and are worth experimenting with. The opinion of the writer is that they would work better if the customary prussiate of potash were added to them.

The chemistry of aniline black is still but imperfectly understood, but it looks as though there were at least three stages of oxidation products of aniline, the first is a dark green substance which is turned blue by an alkaline treatment, this is called azurine and is in the nature of a salt. A further stage of oxidation produces emeraldine and later nigraline, this is also a dark green salt but its free base has a violet black color. This latter becomes green under the influence of acids, especially sulphuric acid, and this explains the reason why some blacks turn green during exposure to the air, but by a supplementary oxidation with bichromate of soda or potash they turn into an ungreenable black, the nigraline salt being peroxidized into the last stage of oxidation and a perfectly stable aniline black is the result.

The oxidation of aniline has been a matter of much study and experiment. If oxidized in alkaline solutions the result has been azolenzine. With arsenic acid the result is violaniline. With chromic acid it is converted into quinone. Chlorates in the presence of metallic salts such as copper, vanadium and cerium convert it into aniline black. Potassium permanganate oxidizes it into nitrobenzene if the solution is neutral, but if alkaline, into azobenzene.

As a rule, the oxidation of aniline is brought about by means of a sodium chlorate in the presence of suitable oxygen carriers such as copper sulphide, vanadium chloride or potassium ferrocyanide. Copper and vanadium blacks are usually developed by being aged in a moderately warm room for a day or two, which converts the color by oxidation into emeraldine and probably further into nigraline, at which stage they are taken down and run through a hot solution of bichromate of potash or soda to complete the oxidation of the nigraline into ungreenable aniline black.

The essential ingredients in our aniline black dye bath are aniline oil, a mineral acid and an oxidizing agent; but usually some mineral salt is also added; certain metals such as vanadium, cerium, copper, manganese and iron having a most remarkable effect in inducing the oxidation of the aniline. The action of vanadium salts is particularly remarkable, one part of this metal being sufficient to transform 27,000 parts of aniline into black. The black is not produced in the absence of free acid however, but a mere trace is sufficient to induce its formation.

As oxidizing agents, chlorates and chromates are the most used, the metallic oxides serving as oxygen carriers.

With a given proportion of ingredients the formation of the black is accelerated by raising the temperature or by increasing the concentration of the bath. Practically, however, the bath must be developed slowly since there is, otherwise, a great loss through the precipitation of the black in the dye bath, and this superficial fixation causes the dyed fabric to "rub off" badly. Both a cold and a warm process may be used, but when dyed in a warm solution the bath can be used more dilute and the amount of the oxidizing agent reduced.

Aniline black is extremely fast to light, bleaching and washing. The oxidation blacks are faster to rubbing than the same blacks dyed in a single bath, but they are not so fast to acids and it may be as well to add here while we are on the subject of "rubbing off," that all aniline blacks, whether oxidized or single bath, when prepared by means of a chromate, always contain chromic oxide and may therefore be topped with mordant dyes, which process reduces the liability to "rub off" and in many cases entirely eliminates it. Another process, which also serves to accomplish this same result and to produce a very fast black, is to dye a medium shade with a one bath aniline black and then top with a direct cotton color, which may be fixed by a subsequent chroming or by diazotizing and developing.

We have shown that aniline black is the product of the oxidation of aniline oil or aniline salt in an acid state of solution.

Aniline oil is a weak base and forms salts with the mineral acids. A mixture of aniline and hydrochloric acid forms a mass of colorless crystals, which become of a greenish cast on exposure to the air. This is the aniline salt of commerce.

Aniline salt (Hydrochloride) $C_6H_5NH_2$, HCl is prepared by mixing 100 parts of aniline oil with 133 parts of hydrochloric acid at 32 degrees Tw. in a stoneware crock. The salt which crystalizes out is drained in a centrifugal machine and dried. The acid used must be free from iron or copper or the salt will be black. After removing the crystals the aniline remaining in the mother liquor may be recovered by neutralizing with lime or soda.

In the practice of the dyehouse, however, we convert the aniline oil into aniline salt ourselves by adding the aniline oil to the hydrochloric acid separately and then adding it to the dyebath, unless, of course, we purchase the aniline salt already made. It must be remembered in this connection that only one part of aniline oil is soluble in 31 parts of water, but that it dissolves in all proportions in a 50 percent solution of aniline salt in water, hence, when commercial aniline salt is used, which always contains much free acid, it is always customary to add aniline oil to the bath to combine with the free acid and prevent tendering the goods.

As an example of the formation of the aniline salt in the dye bath, we may give the following two recipes which are for one bath aniline blacks, but which may come in useful to many readers as they are good blacks without all the trouble of ageing, etc., to which the oxidized black is subject.

(1) Work the material for about two hours in a cold solution containing 10 parts aniline oil, 20 parts hydrochloric acid, 20 parts chrome, and 10 parts ferrous sulphate (copperas). The ferrous sulphate here employed is oxidized by the chromic acid to a ferric salt, which serves as a carrier of oxygen to the aniline. This method of dyeing is easily carried out and it gives a good black; but since much of the coloring matter is precipitated on the fiber superficially, as well as in the bath itself, the color has the defect of rubbing off; but we have previously shown how this defect may be largely remedied.

(2) Aniline black for 100 pounds of cotton yarn. Mix 6 lbs., 9 oz. of aniline oil with 8¾ lbs. of hydrochloric acid at 32 degrees Tw. Let it cool and then add the solution of 4 lbs. 6 oz. chlorate of potash in 66 pints of water. Then add 43¾ pints of chloride of iron at 30 degrees Tw. The yarn, previously bleached, is placed in this mixture, which must be cooled down with cold water to 100 degrees F., lift and neutralize with soda, wash and steep for half an hour in chrome, 7 ounces, dissolved in 33 pints of water at 112 degrees F.; wash and work in 17½ ounces of aniline oil, 2 lb. 3 oz. potash and 33 quarts water; wash well. This black will not rub off.

The following methods give a good black on 100 pounds of goods (yarns or hosiery):

(1) Boil the yarn off thoroughly and then sour for 15 minutes in a weak sulphuric acid bath. The dye bath is made up in the following proportions into about 75 gallons:—6 lbs. of aniline oil; 5 lbs. hydrochloric acid, 35 degrees Tw.; 4 lbs. of sulphuric acid, 168 degrees Tw.; add to this previously dissolved in a separate vessel 9 lbs. of chrome, 2 lbs. copper sulphate and 2 lbs. of nitrate of iron at 100 degrees Tw. Work the goods in this bath cold for one hour, then bring the bath up to a boil in one hour and boil for half an hour. The yarn should then be a deep black, with a greenish tinge. Lift, expose to the air for a short time, rinse thoroughly, soap at a boil and dry. If 2½ lbs of starch be added to the soap bath the black will be found to be faster to rubbing. Always dissolve the aniline oil in the hydrochloric acid separately.

(2) Dissolve 10 lbs. of chrome, 2 lbs. of sulphuric acid, 3 lbs. of hydrochloric acid, 32 degrees Tw. in 75 gallons of water, stir well and add 5 lbs. of aniline salt previously dissolved; or in place of the aniline salt, 3 lbs. 9 oz. of aniline oil dissolved in 4 lbs. 10 oz. of hydrochloric acid at 32 degrees Tw. Work the yarn for 1½ hours in the cold liquor, heat to 120 degrees F.; after one hour raise the temperature to 175 degrees F. Rinse well and soap for one hour at 130 to 175 degrees F., with 5½ lbs. of soap and 1½ oz. of olive oil. Wring without rinsing and dry. If one per cent of logwood extract is added to these soaping baths it may help the black and prevent the rubbing.

(3) Boboeuf's one bath black, which is largely used in France at present, is a jet black, practically ungreenable and is dyed as follows:—Solution (a) 6 lbs. of aniline oil are dissolved in 9 lbs. of hydrochloric acid, 12 lbs. of sulphuric acid and 20 gallons of water. Solution (b) 12 lbs. of sodium bichromate are dissolved in 20 gallons of water. Equal parts of (a) and (b) are mixed in an earthenware vessel, 2 lbs. of yarn are worked quickly in this bath. A bronzy black is developed within one or two minutes. When all the yarn has been impregnated in this manner, it is well wrung and steamed for 20 minutes at 3½ lbs. pressure. The yarn is finally rinsed and soaped as before. The utility of the steaming is based upon the fact that a black produced at an elevated temperature does not green so readily as one dyed in the cold.

(4) The Chemical Society of St. Denis, France, gave a prize for the following recipe for a one bath aniline black, and I ask the reader to note the way the aniline salt is made in the dyehouse from aniline oil and acid. For 100 kilos of cotton, mix 5 litres of aniline oil (pure) with 10 kilos of hydrochloric acid at 22 degrees Be., (32 degrees Tw.); allow this mixture to crystallize. Dissolve the crystals in warm water and add the solution to the cold dye bath of about 1000 litres. To this add 6 kilos of potassium or sodium bichromate previously dissolved

in water, 600 cc (cubic centimeters) of a solution of chloride of iron at 40 degrees Be., and 600 cc sulphuric acid. Stir the bath, enter the stock, work quickly until the color develops uniformly, and work for 1 hour cold. Heat gradually to the boil, add 2 kilos of potassium bichromate, work well and allow the yarn to remain in the bath for about ½ hour at 80 degrees C., rinse well, soap boiling and finally rinse.

Aged aniline black. Aged black is produced by padding the material with a solution of aniline salt and a metallic salt (coper, iron, etc.), which acts as an oxygen carrier. The impregnation is followed by the process of ageing. The goods are finally soaped and washed. Process 1. The cotton yarn is boiled with soda in the usual manner, rinsed in water and well wrung or hydroextracted. The following solutions are mixed together: 120 parts of aniline salt, 40 parts of sodium chlorate, 5 parts of ammonium chloride, and 3 parts of copper sulphate; then add 120 parts aluminum acetate, 21.6 degrees Tw.; and dilute the whole to a density of 12 degrees Tw. Impregnate the thoroughly wetted-out yarn with this solution, hydro-extract (the liquor coming from the hydroextractor is kept), place on hurdles and dry at 95 degrees to 104 degrees F. The yarn must be well shaken out before it is placed in the drying and ageing room, as well as during all the process of ageing. When the cotton is perfectly dry, steam is allowed to enter the room for the purpose of completing the ageing. Ageing should be complete in from 6 to 8 hours or perhaps longer. I should have said that the yarn, after impregnation with the dye liquor, should retain about its own weight of liquor when it enters the drying and ageing room. After being well shaken out the yarn is placed on sticks which have been previously wiped over with the aniline liquor and dried.

The aging chamber should be large enough to hold a whole day's production and should be provided with a ventilator in the ceiling and a fresh air inlet underneath the floor. The air which enters is conducted over radiators which heat it. The saturated air is removed by means of ventilators. The height of the chamber should be at least 15 feet, because there should be sufficient free space above the yarn in which the vapors can collect before being removed by the ventilators.

The space required for aging may be calculated on the basis of 280 to 350 cubic feet for each 100 lbs. of yarn. Uniformity of temperature in every part of the ager is very essential for the production of a good black. For this reason the amount of air removed by the ventilators must be carefully adjusted, in order to prevent any undue draft being created. The impregnated yarn should be evenly, but not too closely, distributed in the ager. When the ventilator is set in motion the temperature should be raised to 94.5 degrees F.

Wooden laths, about 1¼ inches square, with rounded off corners, and about 10 feet in length, may be used in place of ordinary sticks. About 4½ lbs. of yarn should be placed on each stick. During the process of drying the laths or sticks are turned by hand in such a manner that within every 8 or 10 minutes the position of the yarn on the laths is reversed. The drying of the yarn should be completed in from 4 to 6 hours. For the ageing proper which follows the drying, moist heat is required. For this purpose steam is allowed to pass into the ager until the dry bulb thermometer registers 94.5 degrees F., and the wet bulb 86 degrees F. During the process of ageing, which takes from 6 to 8 hours, the laths should be turned from time to time. When the yarn has turned a blackish green color the aging is complete (this takes some judgment) and the yarn is removed from the ager and entered into a bath containing for 100 lbs. of yarn: 200 gallons of water, 6 lbs. bichromate of potash (or soda) 4¾ gills of sulphuric acid. Turn quickly for 10 to 15 minutes, thoroughly rinse and soap at 175 degrees F. with 3 lbs. of olive oil soap and 1 lb. of soda ash per 100 gallons of water, thoroughly rinse and dry.

There are a few things the writer would ask the reader to especially note with regard to aniline black dyed by any formula. The intensity of the finished black depends upon the amount of liquor absorbed. After the final chroming there must be no delay in getting the stock rinsed in water; to lay in the chrome is fatal to good even results. Again it occurs to the writer while copper sulphate is so scarce and high in price it might pay to use vanadium, which is far more effective than copper or any other metal salt. It takes so little vanadium to give good results—one grain of vanadium chloride to each gallon of padding liquor being sufficient.

The following receipts are standard German and English:

Steep the dry yarn in a cold bath containing per 100 gallons 110 lbs. of aniline salt, 40 lbs. of potassium chlorate, 15 lbs. of copper sulphate, 30 lbs. of aluminum acetate, 15 degrees Tw., and 5 lbs. of wheat starch. The liquor should have a density of 7½ degrees Tw., and must be kept at this during dyeing, by adding fresh liquor. Dry, age, chrome, etc.

(2) 128 lbs. of aniline salt, 12 quarts of aniline oil and 6 quarts of acetic acid in 45 gallons of water, 46 lbs. of chlorate of soda and 70 lbs. of prussiate of soda in 30 gallons of water. Mix the whole by adding water to the first mixture until it comes up to 120 gallons, then add the second mixture and more cold water until the total mixture stands at 10 degrees Tw. Dry, age, chrome, soap, etc., as previously described.

(3) 180 lbs. of aniline salt, 15 lbs. of aniline oil and 40 gallons of water. 60 lbs. of yellow prussiate of potash, 60 lbs. of yellow prussiate of soda and 95 lbs. of chlorate of potash, with 40 gallons of water. Boil until dissolved and mix the two and boil until the liquor has a yellow look, then filter the whole through burlap into a stock tub holding 200 gallons, add water until it stands at 10 to 12 degrees Tw. Dry, age, chrome and soap as described; if aged on ageing machine, continuously, however, the temperature should stand between 195 and 210.

Steamed blacks are suitable for piece goods only and I will not discuss them here.

Curtis & Marble Machine Co., manufacturers of all kinds of cloth finishing machinery, are sending out their new calendar for 1916. This is of the wall panel variety, the lower half of the panel being devoted to a large size readable calendar pad, while the upper half of the panel is devoted to their various types of cloth finishing machinery. The calendar is a useful and practical article and well adapted to hanging on the wall of the finishing room or by the desk of the cloth room overseer. A copy may be secured on application.

The Necessity for an American Dyestuffs Industry.*

BY HENRY HOWARD.†

A year ago at St. Louis, I discussed the chemical industry under the general subject of "Problems Arising in War and Commerce." At that time importations had fallen off only 3¾ per cent from July to November inclusive, as compared with the same period in 1913. Importations of dyestuffs were coming in regularly from Germany and there was no actual shortage. As I pointed out, the greatest effect of the war upon the chemical industry was a national awakening to the absolute dependence of America upon foreign countries for products which are essential to our national welfare.

Germany was strictly limiting us to 75 per cent of the tonnage of dyestuffs that we bought from them during the twelve months preceding the war. That is, she allowed us us to buy only one-twelfth of this quantity each month, so that, *if we attempted to increase the volume of our textile business and of other businesses using dyes beyond what it was the preceding year, we would be confronted with a shortage of dyes,* and I further pointed out that *this was likely to prove a serious obstacle in the development of any large foreign business in the goods affected.* How true this statement was is now apparent to every one.

Within three months after our St. Louis convention, the importation of all chemical products from Germany was stopped, and we have since been getting along with what had been accumulated outside of Germany plus the amount that our small dyestuff industry could produce in this country.

There is no doubt that at present Germany has some dyes available for distribution, and the British Order in Council permits its shipment to this country. We must, therefore, draw our own inferences whether Germany does not want us to have these dyes unless we give cotton in exchange or whether she wishes to restrict our activity in foreign trade.

The result has been disastrous to what we all desire—namely: an increase in our foreign trade in textiles. Many textile mills have been obliged to curtail their output at a time when, if we had been independent of other countries, with a dye industry well established, these same mills could have been running night and day manufacturing goods for export and establishing foreign connections by aid of which a considerable percentage of this business might have been retained after the close of the war.

Let us go back for a moment now and see why there is no adequate coal-tar industry in this country. Investigation shows that the fault cannot be charged to the Democratic party but to the strenuous efforts of the foreign manufacturers and American importers, ably assisted by the short-sighted selfishness of these same textile manufacturers who are now the principal sufferers. I do not think that, in many cases, these textile manufacturers acted of their own initiative but were influenced by the clever arguments of American representatives of foreign color manufacturers.

In the winter of 1908-09 I took active part in Washington on behalf of the chemical manufacturers to try and maintain the small protection we had left, and to get suitable protection on basic coal-tar products so that the industry could be established here on a firm foundation from the ground up, because in no other way can it be independent of other nations. Yet our efforts failed, largely as the result of the opposition of the well-protected manufacturers.

If you will look on Page 146 of the Tariff Hearings before the Committee on Ways and Means of 1908-09, you will find a memorial and protest in opposition to any advance in duties on coal-tar colors and dyes signed by 17 New England textile manufacturers.

According to I. F. Stone, in an address before the National Exposition of Chemical Industries: "The lines of manufactures which are dependent on their supply of dyestuffs, to continue their regular production, the most important, perhaps, are the textile manufactures, comprising cotton, wool, carpets, knit goods, silk, cordage, shoddy dyeing and finishing.

When you consider that the value of the coal-tar products annually imported is normally only $10,000,000, of which not more than 75 per cent or $7,500,000 is used for textiles, an increase of 10 per cent in the duty if the whole amount had been paid by the textile manufacturer would have been $750,000, or less than 4½ cents

($750,000 ÷ $1,684,000 = .00044)

for each one hundred dollars' worth of textiles produced, a sum so insignificant that it could have had no appreciable influence on the ability of the textile interests to meet foreign competition, and would have been money well expended, not only as an insurance against the condition which now exists, but would in many cases have resulted in the ultimate lowering of the price of goods in which there is no competition at present.

Few people remember that in 1882 we had quite a flourishing young coal-tar industry which, with consistent protection, would have long since been a large—if not a dominating—factor in our color supply. The fatal tariff was made in 1883 through the initiative of the importers, backed up by the cooperation of users of colors. Let me quote from a statement made by E. P. Wheeler, Vol. 1, page 230, of Report of the Tariff Commission, 1882:

"Would it be a wise policy for us to build up a manufactory of aniline dyes in this country when they can be made more cheaply abroad because the raw material is found in a cheaper condition in England? The English coal, as everybody knows, is richer in the hydrocarbons or inflammable matter than our American coal, and it is well known that we do import to some extent English coal to make gas, although the duty on it is a high one. The only objection that has been or could be made in regard to that would be that if we got into a war with some of the European countries we should be at a disadvantage in regard to these colors. I suggest that that is a very contingent and remote disadvantage; that the possibilities of such a war are insignificant."

In Vol. 1, page 207, there is a letter from H. K. Lansing, treasurer of the Albany Aniline Works, dated Feb. 8, 1882, from which I will quote, and which shows the promising state of the industry at that time:

"We are now engaged in the manufacture of all the fine aniline blues, and expecting ere long to make all the finer colors made in Europe. As an illustration of the benefit the country has derived from our efforts, we can state that large crystals of red were sold in 1868 at $6.50 gold. We now supply the trade with an acknowledged better color at $2.50 per pound. Blues were sold one year ago at $4. Since we commenced making the price has dropped to $2.50. We think we deserve the sympathy and encouragement of the powers that be."

In refreshing contrast to the textile manufacturers'

*Extracts from a paper read before the Third National Trade Convention at New Orleans, La.

†Vice-President Merrimac Chemical Company; Chairman of Executive Committee of the Manufacturing Chemists' Association of the United States.

action in 1908, allow me to quote from a statement of James Hendrick, president of the Albany Aniline & Chemical Works, page 256, Tariff Commission's Report, 1882:

"The Pacific Mills and other like manufactories in this country express the strongest hope that we shall receive from you the encouragement we are entitled to. In a letter addressed to me within a week by Mr. Saltonstall, the treasurer, he said there were some importers, or the agents of foreign color companies going through the mills in New England, expecting to get a petition signed in favor of the reduction of the duty on aniline colors, and he said they would have no sympathy from them and cautioned me against them."

Again, in a communication from V. G. Bloede, representing the American Aniline Works of Parkersburg, W. Va., dated Aug. 21, 1881, Vol. 1, pages 565-568, Tariff Commission Report, 1882, Mr. Bloede says:

"The actual disposition of the largest consumers of the anilines is fairly represented by the following sentence in a letter recently received by me from one of these consumers: 'The representatives of a large European aniline works are making a great push to have the duties on anilines reduced. I enclose you their circular, which they are sending to all the manufacturers to obtain signatures. What do you as a manufacturer think of it, and what would you propose? We can stand it as it is, and, having all the protection we need on our manufactures, are willing to give all that is required to others.'"

The subsequent history of the aniline industry is lamentable. The Tariff Act of July 1, 1883, made a heavy reduction in the duty. No new factories were started, and within one year after the new tariff took effect, five of those already established were forced to succumb and go out of business, leaving only four to continue the work. These have since stayed in the business, but have not been able to develop to any extent.

In bringing to light past history I do not wish to be understood as bearing grievance against the textile manufacturers for any mistaken policy which they may have heretofore adopted. No one recognizes the error of this policy more keenly than these manufacturers themselves, and I am credibly informed that they now stand ready to cooperate in any way possible in order to establish a permanent coal-tar industry within the United States.

Compare the present condition of textiles in this country with that of iron and steel.

The latter industry, thanks to the consistent protection which for years was extended to every branch of the business, is now absolutely independent of the rest of the world in its ability to manufacture all standard grades of iron and steel products in this country, with the result that not only are all American users of iron and steel products getting their supplies regularly as before the war began, but a large export business is being developed as the result of the paralysis of this industry abroad. In textiles the saving of a possible 4½ cents on a hundred dollars' worth of product has resulted in so throttling the textile industry that it is having hard work to supply our local markets, much less to gain a strong foothold in the foreign markets formerly supplied by the belligerent countries.

Now what lesson can we learn from these disquieting facts?

It seems to me that first and foremost it points to the absolute necessity of a permanent non-partisan tariff commission of experts that will sift the facts, analyze the situation and recommend rates consistent with the tariff policy of the party in power, and thus enable Congress to accomplish what it wants to do.

Such a commission should be created at the earliest possible moment by Congress, and if our textile industry is to take any active part in foreign trade during the war the first business the Tariff Commission should tackle is the study of the Chemical Schedule with the object of enabling Congress to amend the tariff so as to develop a permanent coal-tar industry on a large scale in this country. At present, in spite of high prices, chemical manufacturers have been afraid to invest any large sums in permanent equipment, realizing as they do that as soon as the war is over the industry would quickly disappear under the present inadequate tariff.

Unfair competition is another means by which the foreign syndicates have kept the coal-tar industry from getting a foothold here. For instance, aniline oil, one of the primary products, was selling at a high price a number of years ago, and an American company built a plant and started to market its product. Then the price was immediately cut on the imported article to a point about 19 per cent below the cost of production in this country, and kept there until the American firm gave up the business. When this result was accomplished, the price was advanced to about the original level.

Again, in 1913, a duty of 10 per cent was placed on aniline oil, and the manufacture was again started, with the result that the foreign producers not only absorbed the whole of the duty but actually lowered the price again to a point where the business showed a loss to the American manufacturer—and this condition was maintained until the war intervened.

Now such competition is manifestly unfair. It is not what might be called legitimate dumping to dispose of surplus product in some foreign country, but is a well-considered design to destroy a new American industry. Such a practice ought not to be permitted, and I think I am right in saying that the present administration has under consideration legislation to prevent it.

There is one other reason—one of public policy—why a coal-tar industry is important to the future of this country. At present every one is thinking and talking of preparedness, and one of its most essential items is our ability to produce enormous quantities of high explosives when they are needed. Germany was able to do this over night in the plants used for coal-tar dyes in times of peace. England, France, and Russia, substantially without this industry, were almost helpless in this respect, and it may be said justly that the existence of the highly developed dye industry in Germany, coupled with its non-existence in Russia, France, and England, has been a determining factor in their relative ability to obtain high explosives, and in the remarkable successes Germany has maintained in the war up to date.

In closing, I cannot do better than quote from the conclusion in my discussion of this subject a year ago as follows:

"Our dependence upon foreign countries for chemicals, whether they be in the nature of raw materials, intermediate products, or finished articles, is a matter of national concern, and I sincerely hope that the Government, the consumer and the chemical manufacturer may unite in friendly cooperation in working toward a common end, *viz.:* the establishment of a coal-tar dye and chemical industry in this country free and independent of all the world."

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What's in a Name?

EDITOR COTTON:

What should we call the man in charge of any department of the mill? Should it be instructor, overseer, foreman or boss? We are all very well aware that any one of these, or all, are practically the same. However, every one does not see it in the same light, that is, I very much prefer to be called instructor, not that I think myself any better than the man that would be called boss, overseer or foreman. It does not sound quite so bad to me to be called overseer or possibly foreman, but please don't call me *boss*, because I don't boss. I do not like to be bossed, therefore, I don't like to boss. Would not the operatives be more satisfied if they could be made to understand that we are not here to boss but to instruct them to do their work in the best possible way? The instructor (boss if you like), is not employed to boss. The successful mill man of today is not a boss but a leader or instructor for the help in his department, and when accepting a new position the sooner we can get the help to understand that we have not come to boss but to instruct, the sooner we will make a success.

Again, I like the term instructor, because it sounds as if we are to be the leader and not the driver. We are not hired to boss, but to instruct the help in the best possible way to do the right thing in the right place and at the right time. Do not understand me to mean that we must never turn anyone off. We must be firm and we must command respect, but there is nothing in getting the big-head and wanting to be boss; we are all alike and human, therefore, live and let live. In conclusion, will say that I am an instructor, overseer, or possibly foreman, but I am not a *boss*.

Honest Bill. (Ky.)

The Mill Gains.

EDITOR COTTON:

I see in your January issue where "Wash" of Mass., says I disagree with him on why spinning rings wear. I have read "Wash's" problem with much interest and hope he willl live long and write on. I am not quoting any text book in my reply but only using practical problems from a manufacturing standpoint. As this is the source that the text books quote the only criticism we can find is that they don't tell us every time what is the cause. "Wash" knows that lighter travelers were intended for finer yarns. Since finer yarns require higher spindle speeds this necessitates greater traveler speed and the faster the traveler moves over the ring surface the greater friction we have there. I claim it is the high speed at which the traveler runs that wears the rings and not its weight, and should a ring spinner be using a traveler so light as to make a considerable difference in the speed of the traveler in relation to the speed of the proper weight which he should use, the ends would be down and the ring not in service, therefore this would be a very good solution to saving the rings.

Answering "L. E. R.'s" problem on efficiency. We find the manufacturing cost per pound of cloth of 20,000 pounds at 18 cents to be $3600. The selling price at ¼ cents per pound off would be $3550. Therefore the loss on account of the sale is $50. The new production of 22,000 pounds would bring the manufacturing cost per pound down to 16.363. The selling price being 17¾ cents we have a profit up to this point of 1.387 cents per pound or $305. Taking into consideration the waste from 200 additional pounds at 12 per cent based on 12¼ cent cotton, we have here $29.40 loss in waste. Adding to this the freight at 50 cents per 100 pounds we have $3940, minus $305. Thus we have a clear profit of $265.60 less the selling commission.

M. V. J. (Ga.)

EDITOR COTTON:

I will try to answer "A Problem in Efficiency" by "L. E. R. (Mass)." The piece work per pound will not be changed , it will still cost 5 cents per pound and will add $100 to the weekly pay roll. According to his figures the cost of manufacture is 18 cents per pound and the goods are sold at a loss of ¼ of a cent, or 17¾. To manufacture 20,000 pounds of cloth at 18 cents per pound would cost a total of $3600, whereas if the efficiency of the plant was increased to the amount of getting a weekly production of 22,000 pounds of cloth. adding the $100 additional cost for piece work, brings the total cost of manufacturing 22,000 pounds of cloth up to $3700, therefore his cost per pound to manufacture 22,000 pounds of cloth would be 16.81 cents, and selling at 17¾ cents per pound he would have a saving of 94/100 cents per pound.

Honest Bill (Ky.).

EDITOR COTTON:

I would suggest the following answer to "L. E. R.'s" problem in efficiency in January COTTON.

Piece-work cost per pound will remain 5 cents.

Day-labor total cost will remain the same, 20,000 pounds at 5½c, $1,100, while production increases from 20,000 to 22,000 pounds.

New day-labor cost, 22,000 pounds cost $1,100. Cost per pound, 5 cents.

Supplies and expenses: Cost per pound will remain 7½ cents.

Total cost per pound 17½ cents.

Selling price remains the same, 17¾ cents.

Profit with new scale of production, ¼ cent.

LOWELL TECH STUDENT. (Mass.)

A man who gets up in the morning with a frown on his face and inflicts gloom on everybody he comes in contact with, ought to go and let some big policeman practice osteopathy on his head with a club.

Replies to "Learner."

EDITOR COTTON:

The production question asked by "Learner S. C." is an important one and is of vital interest to all mill men. In as far as I can I shall attempt to answer his question excepting that part of the problem on loom production.

The following data was furnished for the problem: 2467 spindles on 6.25 hank roving, front roll speed 112 r. p. m., 2640 spindles on 6.90 hank roving, front roll speed 106 r. p. m., 16,704 spindles on 29.5 yarn, front roll speed 107 r. p. m., 16,320 spindles on 40 yarn, front roll speed 110 r. p. m.

With this data an accurate estimate cannot be found, for the reason that the efficiency of speeders varies with the size of the frame, and the number of spindles on the frame. The efficiency of spinning frames is influenced by the diameter of the ring and the size of the bobbin.

As an example of varying efficiency on two frames making 5.75 H. R., one frame having 160 spindles, the other having 192 spindles, the actual results showed a difference of 15 per cent in the efficiency of the two machines, the advantage being in favor of the smaller frame. With results varying so widely as this we cannot but take an average per cent efficiency on each line of work. A simple test of the efficiency of two machines can be made as follows: Taking "Learner's" production of 6.25 H R. and 6.90 H. R., assuming both hank rovings were made on the same size of frame, the weight of a full bobbin 10 ounces and allowing 15 minutes on each set for doffing, we find a difference of efficiency of 2 6-10 per cent in favor of 6.90 H. R. This is easily accounted for in the longer time taken to fill a bobbin on 6.90 H. R.

The productions obtained were found with the following equations:

$$\frac{1.125 \times 3.14 \times 112 \times 60 \times 60}{36 \times 6.25 \times 840} = 7.52$$

pounds per spindle per week of 60 hours as 100 per cent production of 6.25 H. R.

By eliminating the variables which are the front roll speed and the hank roving we obtain a constant. more convenient to use,

$$\frac{1.125 \times 3.14 \times 60 \times 60}{36 \times 840} = .420 \text{ a constant.}$$

$$\frac{\text{Constant Front Roll Speed}}{\text{Hank Roving}} = 100 \text{ per cent production in } 60 \text{ hours.}$$

$$\frac{.420 \times 106}{6.90} = 6.45 \text{ pounds per spindle per week as 100 per cent production.}$$

A production constant for spinning frames can be obtained in the same manner as in the speeder problem. The equation for the production would be as follows:

$$\frac{1 \times 3.14 \times 107 \times 60 \times 60}{36 \times 29.5 \times 840} = 125 \text{ pounds per spindle per week} = 100 \text{ per cent production on 29.5 yarn.}$$

The constant is obtained by eliminating the variables of front roll speed and the number of the yarn.

$$\frac{1 \times 3.14 \times 60 \times 60}{36 \times 840} = .374$$

a constant for 100 per cent production.

$$\frac{\text{Constant} \times \text{Front Roll Speed}}{\text{Number of yarn}} = 100$$

per cent production per spindle per week.

$$\frac{.374 \times 110}{40} = 1.06$$

pounds per spindle per week on 40's yarn.

Having obtained the 100 per cent production per spindle, the problem of how much time to be allowed for stops must be considered. The following per cent has been allowed in each case. On 6.25 H. R. 17 per cent allowance for stops, on 6.90 H. R. 15 per cent allowance for stops, on 29.5 yarn 10 per cent allowance for stops, on 40 yarn 10 per cent allowance for stops.

With the above allowances for stops, the productions would be as follows in a week of 60 hours:

7.52 pounds $\times$ 2467 spindles $\times$ .83 = 15,800 pounds of 6.25 H. R.

6.45 pounds $\times$ 2640 spindles $\times$ .85 = 14,450 pounds of 6.90 H. R.

1.35 $\times$ 16,704 spindles $\times$ .90 = 20,150 pounds of 20.5 yarn.

1.06 $\times$ 16,320 spindles $\times$ .90 = 15,520 pounds of 40 yarn.

In allowing 10 per cent for stops for spinning, this is not a fixed quantity. Warp yarns will show a greater efficiency of production than filling. This difference would be more marked in the heavier yarn. This factor of the kind of yarn was unknown.

H. K. (North Carolina.)

EDITOR COTTON:

As "Learner (S. C.) has not given the diameters of the front rolls on his speeders and spinning frames, I will assume that they are 1⅛ inch in diameter for his speeders and 1 inch in diameter for his spinning frames.

Taking the first one, the diameter of the front roll 1⅛ inch $\times$ 3.1416 = 3.4343 inches produced by one turn of the roll. 3.4343 $\times$ 112 r. p. m. = 384.6 inches produced in one minute. 384.6 $\times$ 60 minutes in an hour $\times$ 60 hours required = 1,384,560 inches produced by one spindle. 1,384,560 $\div$ 36 inches to a yard = 38,460 $\div$ 840 yards to 1 hank = 45.7 hanks per spindle per 60 hours. Allowing 10 per cent for stoppage, doffing, etc., 45.7 $\times$ .90 = 41 hanks. 41 $\times$ 2467 spindles divided by 6.25 hank roving = 16,183 pounds production.

Taking the rest the same way we have 1⅛ inches $\times$ 3.1416 = 3.4343. 3.4343 $\times$ 106 = 364. (364 $\times$ 60 $\times$ 60) $\div$ 36 = 36,400. 36,400 $\div$ 840 = 43.3. .90 $\times$ 43.3 = 39. (39 $\times$ 2640) $\div$ 6.90 = 14,922 pounds.

Next, 3.1416 $\times$ 1 = 3.1416 $\times$ 107 = 336. (336 $\times$ 60 $\times$ 60) $\div$ 36 = 33,600. 33,600 $\div$ 840 = 40. Allowing 8 per cent for stoppages. 40 $\times$ .92 = 36.8 (36.8 $\times$ 16,704) $\div$ 29.50 = 20,837 pounds.

Last, 3.1416 $\times$ 1 = 3.1416 $\times$ 110 = 345.5. (345.5 $\times$ 60 $\times$ 60) $\div$ 36 = 34,550. 34,550 $\div$ 840 = 41. Allowing 7 per cent for stoppages. 41 $\times$ .93 = 38. (16,320 $\times$ 38) $\div$ 40 = 15,504 pounds production.

LOWRE. (R. I.)

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EDITOR COTTON:

What should we call the man in charge of any department of the mill? Should it be instructor, overseer, foreman or boss? We are all very well aware that any one of these, or all, are practically the same. However, every one does not see it in the same light, that is, I very much prefer to be called instructor, not that I think myself any better than the man that would be called boss, overseer or foreman. It does not sound quite so bad to me to be called overseer or possibly foreman, but please don't call me *boss*, because I don't boss. I do not like to be bossed, therefore, I don't like to boss. Would not the operatives be more satisfied if they could be made to understand that we are not here to boss but to instruct them to do their work in the best possible way? The instructor (boss if you like), is not employed to boss. The successful mill man of today is not a boss but a leader or instructor for the help in his department, and when accepting a new position the sooner we can get the help to understand that we have not come to boss but to instruct, the sooner we will make a success.

Again, I like the term instructor, because it sounds as if we are to be the leader and not the driver. We are not hired to boss, but to instruct the help in the best possible way to do the right thing in the right place and at the right time. Do not understand me to mean that we must never turn anyone off. We must be firm and we must command respect, but there is nothing in getting the big-head and wanting to be boss; we are all alike and human, therefore, live and let live. In conclusion, will say that I am an instructor, overseer, or possibly foreman, but I am not a *boss*.

Honest Bill. (Ky.)

The Mill Gains.

EDITOR COTTON:

I see in your January issue where "Wash" of Mass., says I disagree with him on why spinning rings wear. I have read "Wash's" problem with much interest and hope he willl live long and write on. I am not quoting any text book in my reply but only using practical problems from a manufacturing standpoint. As this is the source that the text books quote the only criticism we can find is that they don't tell us every time what is the cause. "Wash" knows that lighter travelers were intended for finer yarns. Since finer yarns require higher spindle speeds this necessitates greater traveler speed and the faster the traveler moves over the ring surface the greater friction we have there. I claim it is the high speed at which the traveler runs that wears the rings and not its weight, and should a ring spinner be using a traveler so light as to make a considerable difference in the speed of the traveler in relation to the speed of the proper weight which he should use, the ends would be down and the ring not in service, therefore this would be a very good solution to saving the rings.

Answering "L. E. R.'s" problem on efficiency. We find the manufacturing cost per pound of cloth of 20,000 pounds at 18 cents to be $3600. The selling price at ¼ cents per pound off would be $3550. Therefore the loss on account of the sale is $50. The new production of 22,000 pounds would bring the manufacturing cost per pound down to 16.363. The selling price being 17¾ cents we have a profit up to this point of 1.387 cents per pound or $305. Taking into consideration the waste from 200 additional pounds at 12 per cent based on 12¼ cent cotton, we have here $29.40 loss in waste. Adding to this the freight at 50 cents per 100 pounds we have $3940, minus $305. Thus we have a clear profit of $265.60 less the selling commission.

M. V. J. (Ga.)

EDITOR COTTON:

I will try to answer "A Problem in Efficiency" by "L. E. R. (Mass)." The piece work per pound will not be changed , it will still cost 5 cents per pound and will add $100 to the weekly pay roll. According to his figures the cost of manufacture is 18 cents per pound and the goods are sold at a loss of ¼ of a cent, or 17¾. To manufacture 20,000 pounds of cloth at 18 cents per pound would cost a total of $3600, whereas if the efficiency of the plant was increased to the amount of getting a weekly production of 22,000 pounds of cloth. adding the $100 additional cost for piece work, brings the total cost of manufacturing 22,000 pounds of cloth up to $3700, therefore his cost per pound to manufacture 22,000 pounds of cloth would be 16.81 cents, and selling at 17¾ cents per pound he would have a saving of 94/100 cents per pound.

Honest Bill (Ky.).

EDITOR COTTON:

I would suggest the following answer to "L. E. R.'s" problem in efficiency in January COTTON.

Piece-work cost per pound will remain 5 cents.

Day-labor total cost will remain the same, 20,000 pounds at 5½c, $1,100, while production increases from 20,000 to 22,000 pounds.

New day-labor cost, 22,000 pounds cost $1,100. Cost per pound, 5 cents.

Supplies and expenses: Cost per pound will remain 7½ cents.

Total cost per pound 17½ cents.

Selling price remains the same, 17¾ cents.

Profit with new scale of production, ¼ cent.

LOWELL TECH STUDENT. (Mass.)

A man who gets up in the morning with a frown on his face and inflicts gloom on everybody he comes in contact with, ought to go and let some big policeman practice osteopathy on his head with a club.

Replies to "Learner."

EDITOR COTTON:

The production question asked by "Learner S. C." is an important one and is of vital interest to all mill men. In as far as I can I shall attempt to answer his question excepting that part of the problem on loom production.

The following data was furnished for the problem: 2467 spindles on 6.25 hank roving, front roll speed 112 r. p. m., 2640 spindles on 6.90 hank roving, front roll speed 106 r. p. m., 16,704 spindles on 29.5 yarn, front roll speed 107 r. p. m., 16,320 spindles on 40 yarn, front roll speed 110 r. p. m.

With this data an accurate estimate cannot be found, for the reason that the efficiency of speeders varies with the size of the frame, and the number of spindles on the frame. The efficiency of spinning frames is influenced by the diameter of the ring and the size of the bobbin.

As an example of varying efficiency on two frames making 5.75 H. R., one frame having 160 spindles, the other having 192 spindles, the actual results showed a difference of 15 per cent in the efficiency of the two machines, the advantage being in favor of the smaller frame. With results varying so widely as this we cannot but take an average per cent efficiency on each line of work. A simple test of the efficiency of two machines can be made as follows: Taking "Learner's" production of 6.25 H R. and 6.90 H. R., assuming both hank rovings were made on the same size of frame, the weight of a full bobbin 10 ounces and allowing 15 minutes on each set for doffing, we find a difference of efficiency of 2 6-10 per cent in favor of 6.90 H. R. This is easily accounted for in the longer time taken to fill a bobbin on 6.90 H. R.

The productions obtained were found with the following equations:

$$\frac{1.125 \times 3.14 \times 112 \times 60 \times 60}{36 \times 6.25 \times 840} = 7.52$$

pounds per spindle per week of 60 hours as 100 per cent production of 6.25 H. R.

By eliminating the variables which are the front roll speed and the hank roving we obtain a constant. more convenient to use,

$$\frac{1.125 \times 3.14 \times 60 \times 60}{36 \times 840} = .420 \text{ a constant.}$$

$$\frac{\text{Constant} \times \text{Front Roll Speed}}{\text{Hank Roving}} = 100 \text{ per cent production in 60 hours.}$$

$$\frac{.420 \times 106}{6.90} = 6.45 \text{ pounds per spindle per week as 100 per cent production.}$$

A production constant for spinning frames can be obtained in the same manner as in the speeder problem. The equation for the production would be as follows:

$$\frac{1 \times 3.14 \times 107 \times 60 \times 60}{36 \times 29.5 \times 840} = 125 \text{ pounds per spindle per week} = 100 \text{ per cent production on 29.5 yarn.}$$

The constant is obtained by eliminating the variables of front roll speed and the number of the yarn.

$$\frac{1 \times 3.14 \times 60 \times 60}{36 \times 840} = .374$$

a constant for 100 per cent production.

$$\frac{\text{Constant} \times \text{Front Roll Speed}}{\text{Number of yarn}} = 100$$

per cent production per spindle per week.

$$\frac{.374 \times 110}{40} = 1.06$$

pounds per spindle per week on 40's yarn.

Having obtained the 100 per cent production per spindle, the problem of how much time to be allowed for stops must be considered. The following per cent has been allowed in each case. On 6.25 H. R. 17 per cent allowance for stops, on 6.90 H. R. 15 per cent allowance for stops, on 29.5 yarn 10 per cent allowance for stops, on 40 yarn 10 per cent allowance for stops.

With the above allowances for stops, the productions would be as follows in a week of 60 hours:

7.52 pounds $\times$ 2467 spindles $\times$ .83 = 15,800 pounds of 6.25 H. R.

6.45 pounds $\times$ 2640 spindles $\times$ .85 = 14,450 pounds of 6.90 H. R.

1.35 $\times$ 16,704 spindles $\times$ .90 = 20,150 pounds of 20.5 yarn.

1.06 $\times$ 16,320 spindles $\times$ .90 = 15,520 pounds of 40 yarn.

In allowing 10 per cent for stops for spinning, this is not a fixed quantity. Warp yarns will show a greater efficiency of production than filling. This difference would be more marked in the heavier yarn. This factor of the kind of yarn was unknown.

H. K. (North Carolina.)

EDITOR COTTON:

As "Learner (S. C.) has not given the diameters of the front rolls on his speeders and spinning frames, I will assume that they are 1⅛ inch in diameter for his speeders and 1 inch in diameter for his spinning frames.

Taking the first one, the diameter of the front roll 1⅛ inch $\times$ 3.1416 = 3.4343 inches produced by one turn of the roll. 3.4343 $\times$ 112 r. p. m. = 384.6 inches produced in one minute. 384.6 $\times$ 60 minutes in an hour $\times$ 60 hours required = 1,384,560 inches produced by one spindle. 1,384,560 $\div$ 36 inches to a yard = 38,460 $\div$ 840 yards to 1 hank = 45.7 hanks per spindle per 60 hours. Allowing 10 per cent for stoppage, doffing, etc., 45.7 $\times$ .90 = 41 hanks. 41 $\times$ 2467 spindles divided by 6.25 hank roving = 16,183 pounds production.

Taking the rest the same way we have 1¼ inches $\times$ 3.1416 = 3.4343. 3.4343 $\times$ 106 = 364. (364 $\times$ 60 $\times$ 60) $\div$ 36 = 36,400. 36,400 $\div$ 840 = 43.3. .90 $\times$ 43.3 = 39. (39 $\times$ 2640) $\div$ 6.90 = 14,922 pounds.

Next, 3.1416 $\times$ 1 = 3.1416 $\times$ 107 = 336. (336 $\times$ 60 $\times$ 60) $\div$ 36 = 33,600. 33,600 $\div$ 840 = 40. Allowing 8 per cent for stoppages. 40 $\times$ .92 = 36.8 (36.8 $\times$ 16,704) $\div$ 29.50 = 20,837 pounds.

Last, 3.1416 $\times$ 1 = 3.1416 $\times$ 110 = 345.5. (345.5 $\times$ 60 $\times$ 60) $\div$ 36 = 34,550. 34,550 $\div$ 840 = 41. Allowing 7 per cent for stoppages. 41 $\times$ .93 = 38. (16,320 $\times$ 38) $\div$ 40 = 15,504 pounds production.

LOWRE. (R. I.)

Picker Room Suggestions.

EDITOR COTTON:

I would like to say a few words about the picker room for the benefit of beginners, and some of it I feel assured will be of interest to the more advanced.

One of the most neglected departments in the mill is the picker room. It seems to be the object of some carders to get their cotton through their pickers and into the form of a lap, no matter how they do it. The picker room is an important factor, as important as the other departments, and, in my opinion, more important than the other departments, inasmuch as it is the first process in the manufacture of yarn or cloth, and if the manufacture of yarn or cloth is not started right, it cannot be finished right, Get a good start.

I have often seen the most ignorant of mill help in the picker room, and lots of carders never think of entering the picker room to watch the operatives or examine the work being made.

I will briefly go over the principal parts of the picking department from the opening room to the finished lap.

In the opening room the baled cotton should be opened up and left to age at least 24 hours before using it. It should be well broken up, so as to insure a good even airing for the cotton. Where automatic feeders are used on the opener pickers, the hopper bins should be nearly filled and the operative instructed to keep it as near this condition as possible. This adds greatly to the evenness of the work, as with the hopper kept in this condition the cotton will be fed more evenly to the opener picker.

All cotton waste that is to be run over should be collected every day and the opener tenders instructed to use but a little at a time, so that the waste will last for a day's run and so be evenly distributed amongst the good cotton. The overseer should watch this closely and see that it is carried out to the letter. Waste mixed in large quantities cause the pickers to run bad, causing licking laps and further bad running and weak and uneven roving and yarn on the fly-frames and spinning frames, where it happens to run through.

The trunks and dust holes should be cleaned out at such intervals as conditions warrant, according to the amount of cotton being run and the cleanliness of the raw material.

In the lapper-room I have always found these rules and settings to be productive of good work.

Graduate the settings of the grid bars so that the bottom bars will be very close and the top ones farther apart. This can be done by inserting small pieces of leather between the ends of the bars and so spreading them.

The feed-rolls should be set to the beater so that the striking edge of the beater from the center of the feed rolls will be from ⅜ to ½ inch over the length of cotton being run. Too close a setting here will weaken the cotton and consequently the yarn. The beater running too fast will also weaken the yarn. A good finisher beater (2 blade) speed is 1200 r. p. m.

The fans should be run at such a speed that they will carry a little more cotton to the top cage than to the bottom. This helps to prevent the licking of laps.

The evener motion should be so adjusted that the belt will run in the center of the cones when the picker is running under normal conditions, thus making an even allowance for the thick and thin places in the laps running through.

Every lap (finished) should be weighed, and laps that do not weigh within a half pound either way should be run over. It is, however, bad practice to run many over. If you have trouble in your weighing, thoroughly examine the evener motion and you will probably locate the trouble.

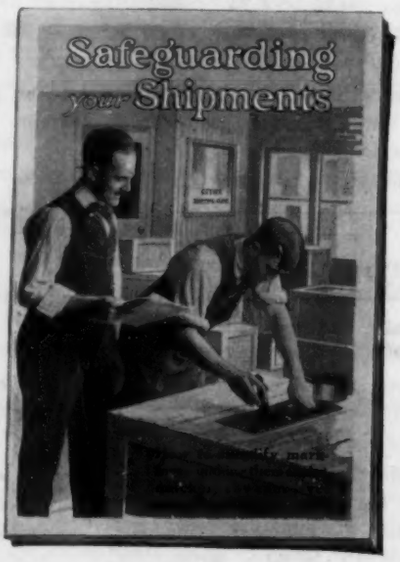
Most every carder will give that same rule that laps should weigh within a half pound either way, but how many carders enforce or try to enforce that rule? Lots of picker tenders let laps go that are five pounds off, because it is too much work to run them over, and anyway, the "boss seldom comes in here and he never weighs any laps." If you want even yarn in the mill, you have got to start right and get even weight in the picker-room.

Oiling is another thing that is neglected. Beater bearings and fan bearings should be oiled twice a day and other fast or medium fast motions should be oiled once a day. Slow motions should be oiled twice a week.

Pickers cannot be scoured too often, and should be stripped down, thoroughly cleaned, and the worn parts repaired at least four times a year.

Black oil in the cloth is oftentimes made in the picker room, and seldom it is suspected. The inside of the beater boxes should be thoroughly wiped once a day. As oftentimes the oil from the beater bearings works through the sides and runs down the sides of the beater casing and as the cotton passes through, it consequently takes some of this oil with it. Too much oil on the racks on the lap-rolls will do this and oily hands on the picker tender will leave black oil marks on the sides of the laps, and this goes right through to the cloth.

LOWRE. (R. I.)



"Safeguarding Your Shipments" is the title of an interesting 24 page booklet for manufacturers which may be obtained free of cost by addressing the Ideal Stencil Machine Co., 3 Ideal Block, Belleville, Ill. Don't blame the other fellow for the things you don't do.

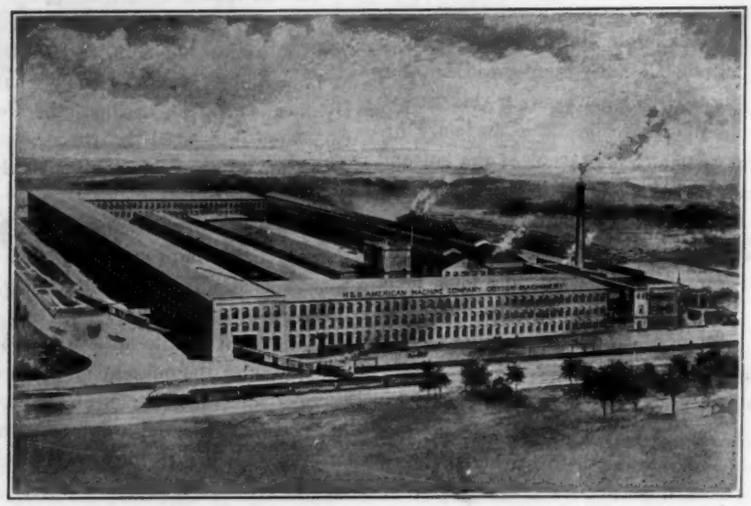
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.,
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY
PAWTUCKET, R. I.

Replies to "R. W. A."

EDITOR COTTON:

I notice in the January issue of COTTON "R. W. A." seems to think I have gotten on the wrong track.

I am sending you another letter on flyer-lead frames and I am going to prove we have gone from bad to worse in the change of system.

When the change in system was made it was discovered that the friction between the differential sleeve and the driving shaft was too great. At that time if the driving shaft made 500 revolutions and the differential made 500 revolutions in the opposite direction, this was equal to 1,000 revolutions when the surface speed of the two inside surfaces was considered. This caused so much dissatisfaction among the best mill men that their talk was the cause of many inventors getting hard at work to overcome the trouble. Finally this was partly overcome in 1897 when Fay H. Martin placed a shell between the driving shaft and differential sleeve. Still, with this arrangement, the strain on the cone belt is very great.

It should be clearly understood that in the case of the flyer-lead, the cone belt is called on to only check the speed of the bobbin; in other words, the cone belt is at all times holding back and preventing the bobbin from revolving too rapidly. In the case of the bobbin-lead the cone belt is called on to drive the sun gear against the opposite direction of the differential, besides driving all the bobbins in excess of the speed of the spindles.

Compare the two systems. In the case of the bobbin-lead the bobbins rotate at all times at a speed exceeding that of the spindle, while in case of the flyer-lead, at no time does the bobbin revolve as fast as the spindle except at doffing time.

Which has the better speed reducing motion? The new differential motion or the Houldsworth differential motion? The sun gear, as a rule, may contain from 100 to 120 teeth, whereas, its more recent substitute contains 30 to 36 teeth. It should be seen that this difference alone representing the speed of the gear on the differential sleeve in the new motion is equal to about four times the speed of the sun gear of the Houldsworth motion. The contrast between the two motions should be noticed. Here I wish to state that whether the cone drives or is driven, they really are governors. However, if the cones are obliged to drive as in case of the bobbin-lead, there is more work for the cone belt to accomplish. If the mechanism were such as to assist the cone belt, as in the case of the flyer-lead, the work is still severe, but even in that case the cones are essentially governors.

A. B. (N. C.)

EDITOR COTTON:

In the February issue of COTTON I read with interest "R. W. A's" article entitled, "Examine the Man." He gives little of value pertaining to the subject of the merits of the two systems, however, he simply takes a fling at "A. B." and others.

He says he has had twenty years experience on bobbin-lead fly frames and has never seen a frame that he could not run full. He is certainly a lucky man, and I would advise him to stick to his present job. I have been obliged to doff fly frames many times in the summer months, and

I think the readers of this department will give me credit of knowing something about fly frames.

He states, "If the flyer-lead frames are so much better than the bobbin lead frames, please tell the readers of COTTON why there are not more of them used in this country." This is why! At that time the few men who knew that different hanks, speed, stock and type of flyer, etc., changed the outline of the cones, were in the minority. Few men knew the difference between a high and low speed cone. The latest differential motions all have high speed bottom cones and any practical speeder man knows what this means in running a perfect bobbin of roving. The majority of men thought, at that time, that any hesitation of the bottom cone would cause stretch. I have offered a check for five dollars in these columns to any one that could explain how this could be possible, but to this date no one has been able to give a satisfactory answer. Still, you will find most men will tell you that this was the reason why the flyer-lead frames were discarded. Many believe this to be true to this day, but are unable to explain themselves.

When "R. W. A." states that "he has no stretched roving on his fly frames," he makes the confession that he has a great deal to learn about fly frames. Stop any bobbin-lead fly frame, raise any bobbin gear and turn it back so as to make the end very slack, next, start the frame, and it will be found that this slack will be taken up immediately. Now, please, what takes place in the other ends? Stretch. If "R. W. A." answers this letter, please let him explain this fact.

He states, "Don't lay your trouble to the bobbin-lead frame. This is like a man getting off of a moving train backwards, he generally falls." Here is where "R. W. A." put his foot in it, so to speak, for the reason that when a man steps off a train, he severs his connection with the load, that is what was done when the change was made. In the flyer-lead system, the flyer revolves at a greater speed around the surface of the bobbin, which aids in pulling the bobbin with it, or, in other words, the flyer is pulling the load, while in the bobbin lead system the load is on the bottom cone as the bobbin runs at a speed in excess of the flyer. "R. W. A." has a task on his hands if he intends to prove "A. B." wrong. Can "R. W. A." answer the following questions:

Why is it that the Houldsworth differential motion has its sun gear contain 100 to 120 teeth, whereas its more recent substitute contains from 30 to 36 teeth? What effect has this on the bottom cone? Which system holds the twist most at the termination of the presser paddle? What drives the bobbin at an excess speed to that of the flyer in the bobbin-lead system? Does any hesitation of the bottom cone stretch the roving in the flyer-lead system? Does different hanks, speeds, stock, twists and types of flyer effect the true outline of the cones? Can "R. W. A." win that $5.00?

Wash. (Mass.)

If you don't like your job, pass it up. If you do like it, decide definitely that you do and smile at everybody you come in contact with. You don't have to be what is known as a "mixer" to radiate courtesy. It doesn't take hot air. A deaf and dumb mute can be, and many of them are, examples of courtesy.

The Prize Winning Letter.

(Continued from page 208.)

The Georgia Railway & Power Co., have adopted a novel way of catching the reader's eye by means of a cartoon which (if ever) has rarely been used by any other advertisers in COTTON.

As the reader looks through his COTTON, the picture of one of our "antedeluvian ancestors," in the act of striking another with a big club, catches the eye of the reader, and he immediately wants to know what the comedy is all about. By means of that cartoon, the Georgia Railway & Power Co., have interested the reader, who, after reading the explanation of the cartoon, invariably pursues the rest of the advertisement.

The cartoon is briefly described and its relation to the present day conditions compared and it is found that although society is more polite today, yet as in the olden days, the fittest shall survive. By this method, they lead up to the failure of textile mills with worn out methods and inefficiency, and the success of up-to-date mills with their up-to-date equipment to meet the demand of the new times, by greater efficiency, lower costs, and increased output.

The Georgia Railway & Power Co., then tell you how this is accomplished by the electric drive, explaining briefly and precisely how it achieves greater efficiency, lower costs, and increased output.

Finally they state that without cost to you, they will send their experts to study your problem and suggest the solution. What more of importance could they state even if they had a two-page ad?

(Signed) Albert J. Owler, Overseer of Carding, Nottingham Mill, Providence, R. I.

Other Letters.

Among the many letters received from the contestants were a number of good ones. Some of these are reproduced this month and to each of these contestants, whose letter is printed, a pocket card gage will be sent as a special reward for the letter used.

No contest announcement is made this month, but one will again appear in the April number. Watch for it.

Contest Department of COTTON:

The lesson of preparedness found in a clean, clear cut advertisement is an asset that no manufacturer can do without.

I know of no single advertisement among the many good ones found in January COTTON, dealing with an all important factor to every manufacturer, be he large or small, than that of Chaffee's Mill White. Their claims are concise, and just what every one should have in high class paint. As the advertisement sets forth, this paint is:

1st—Permanent,
2nd—Light diffusing,
3rd—Sparkles with light,
4th—Adds light,
5th—Lowest cost,
6th—Lights nooks and corners,
7th—Prolongs the daylight hours,
8th—Reduces the bill for artificial light,

(Continued on page 246)

Barrett Specification Roofs

Cost nothing to maintain—

If you incorporate The Barrett Specification verbatim in your building plans, you then will get—

1.—a roof that has a lower cost per year of service than any other roof covering known.

2.—a roof that costs nothing to maintain.

3.—that is endorsed by the Underwriters' Laboratories and takes the base rate of insurance.

4.—a roof that will give twenty years or more of service.

5—that is recognized as standard everywhere and that today covers most of the first class buildings in the country.

We should like to send every architect, engineer and owner of buildings a copy of the Underwriters' Laboratories Report on Barrett Specification Roofs and also a copy of The Barrett Specification.

Address nearest office.

Special Note

We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding.

If any abbreviated form is desired, however, the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the material specified and subject to the inspection requirement.

THE MONTANA APARTMENTS
375 Park Avenue, New York City

Architects:
Rouse & Goldstone, N. Y.
Roofers:
Tuttle Roofing Co., N. Y.

Tar-Rok
(*Tar Concrete*)
Sub-Floors

These have been used for upwards of thirty years in mill construction to provide a permanent, inexpensive wood floor laid directly on the soil. The Barrett Specification for Tar-Rok Sub-Floors provides for a form of tar concrete that is easily and cheaply laid and which is of the right character to exclude all dampness of the soil and protect the planks from decay. This form of construction is cheaper than any air space or cellar construction and furnishes an ideal base for machinery, as well as a warm, dry floor for workmen. Booklet on request.

VELVEX CREOSOTE SHINGLE STAINS

Being made with creosote as a base, they preserve the wood against decay. Made in many soft velvety colors. Permanent and cheap. Booklet on request.

The Barrett Company

TRADE B MARK

New York Chicago Philadelphia Boston St. Louis Cleveland
Cincinnati Pittsburgh Detroit Birmingham
Kansas City Minneapolis Salt Lake City Seattle Peoria

THE PATERSON MFG CO., Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

Notes About Men You Know.

GEORGE MCGREGOR has resigned as general section hand in the spinning room at the Warren Mfg. Co., Warren, R. I., to accept a position as overseer at White Rock, R. I.

D. C. WILLIAMS, superintendent of the Avon Mills, Gastonia, N. C., has also become general superintendent of the Gastonia (N. C.) Cotton Mfg. Co.

C. W. RICE has resigned as superintendent of the Easley Mills No. 2, Easley, S. C., and has been elected secretary of the Hartwell (Ga.) Cotton Mills.

E. P. COFIELD has been promoted from overseer of cloth room to assistant superintendent of the Brogon Mills, Anderson, S. C.

ELLWIN H. ROONEY, who for many years has been connected with the Whitin Machine Works, Whitinsville, Mass., has severed his connection with that firm and accepted a position with the Paramount Knitting Company, Kankakee, Ill., as superintendent of their spinning department.

LANG S. DOGGETT, treasurer of the Putnam-Hooker Co., Cincinnati and New York, died suddenly on February 15th from heart trouble. He was originally in the banking business, but for 18 years had been with the Putnam-Hooker Co., and for 12 years its treasurer. He was unmarried. His many personal and business friends are mourning the loss of a good comrade and square dealing business associate.

ELLIS T. GURRY has been promoted to the position of night overseer of carding at the Warren Manufacturing Company, Warren, R. I.

G. B. BYRD has resigned as superintendent of the Franklin Mills, Greer, S. C., to accept a similar position at the Easley Mills No. 2, Liberty, S. C.

G. W. PARROTT has resigned as superintendent of the Hartwell (Ga.) Mills to accept a similar position at the Franklin Mills, Greer, S. C.

ROLAND HOLT, who has been overseer of carding for some time at the Corr Mfg. Co., Taunton, Mass., has resigned to accept a position as superintendent of a Southern cotton mill. Mr. Holt is well at home in the South, having been with his father at Fayetteville, N. C., for many years.

JOSEPH H. BOWEN has been elected president of the Laurel Lake Mills, Fall River, Mass., to replace the late Leonard N. Slade.

J. H. COPE, of Spartanburg, S. C., has been elected president of the Bamberg Cotton Mills, Bamberg, S. C.

E. F. VERDERY has resigned as president of the Bamberg Cotton Mills, Bamberg, S. C.

R. H. BRAZEAL, of Chattanooga, Tenn., is now master mechanic at the Tallassee Falls Mfg. Co., Tallassee, Ala.

W. R. TATTERSALL, superintendent of the Gaffney (S. C.) Mfg. Co., has announced himself a candidate for alderman of his town.

JOHN T. CRUMP has become night overseer in one of the rooms at the Linden Mill, Davidson, N. C.

W. I. HENSON, formerly overseer of carding at the Brown Mill, Concord, N. C., has accepted the position of superintendent of the Magnolia Mill, Concord, N. C.

LINDSAY PADGETT has been promoted from overseer of weaving at Chadwick-Hoskins Mill No. 1, Charlotte, N. C., to superintendent of mills No. 1 and 2.

J. D. BUICE has resigned as superintendent of Chadwick-Hoskins Mills No. 1 and 2, Charlotte, N. C., to become superintendent of Chadwick-Hoskins Mill No. 5 at Pineville, N. C.

J. M. O'BRIEN has resigned as superintendent of the Tallassee Falls Mfg. Co., Tallassee Falls, Ala.

JOHN T. WHITAKER has resigned his position as general superintendent of the Gosnold Mill, New Bedford, Mass.

JOHN B. HENRION, president of the Mentor Knitting Mills, Mentor, Ohio, was shot and seriously wounded by an unknown party last week in his office in the mill.

W. T. ROYSTER has resigned his position with the Dupont Powder Co., City Point, Va., to accept his former position as overseer carding and spinning at the Jackson Mills, Monroe, N. C.

GEORGE F. WRIGHT, president of the Pawtuxet Valley Textile Co., Riverpoint, R. I., and Mrs. Wright left recently for several weeks' sojourn in the Bermudas.

HUGH GOURLEY has been appointed general superintendent of the Gosnold Mill, New Bedford, Mass., in place of John T. Whitaker, resigned.

J. G. GREENLEE has resigned as superintendent of the Cape Fear Mills, Fayetteville, N. C., and accepted a similar position at the Millen (Ga.) Mills.

J. H. MCDOWELL, of Wadesboro, N. C., has accepted the position of night superintendent at Hermitage Mills, Camden, S. C.

S. C. UPCHURCH, formerly of Valdese, N. C., has accepted the position of superintendent of the Johnston Mfg. Co., Charlotte, N. C.

J. H. JACUMIN of Valdese, N. C., will be superintendent of the new knitting mill at Shelby, N. C.

G. R. WARD has accepted the position of night superintendent at the Highland Cotton Mills, High Point, N. C.

M. T. GRIMES has resigned as superintendent of Chadwick-Hoskins Mills No. 5, Pineville, N. C., to become superintendent of the Tallassee Falls Mfg. Co., Tallassee, Ala.

J. M. HODGES, of Cedar Falls, N. C., has accepted the position of superintendent of the Cape Fear Cotton Mills, Fayetteville, N. C.

W. R. TATTERSALL, superintendent of the Gaffney Mfg. Co., and the Globe Mills, Gaffney, S. C., was elected an alderman in his town, defeating his opponent by a large majority.

T. H. FAIRCHILD, of Mooresville, N. C., has accepted the position of superintendent of the Jonesboro (Tenn.) Yarn Mill.

W. F. SMITH has been promoted from overseer of spinning and twisting to night superintendent of the Bibb Mill, Porterdale, Ga.

J. A. MCFALLS has resigned as overseer of spinning at the Jewel Mill, Thomasville, N. C., to become superintendent of the Dilling Mill, Kings Mountain, N. C.

E. L. GOBLE has resigned as superintendent of the Jonesboro (Tenn.) Yarn Mill.

Front View Pacolet Mfg. Co., New Holland, Ga.

Pyrene FIRE EXTINGUISHERS

King Cotton's most trusted aide-de-camp is Pyrene.

Cotton quotations may rise or fall, but the cotton fire peril goes on forever.

Fire is the one worst foe of the mill-owner.

When ordinary fires are put out, they're out.

When a cotton fire is apparently out, it is usually still gnawing its smouldering way deep into bale or pile, to break out anew hours—even days—afterwards.

For the hollow spaces in the cotton fibre retain sufficient air to permit combustion.

Water puts out surface burning, but won't penetrate the bale and extinguish hidden sparks. For the oily nature of cotton prevents water from penetrating it.

Pyrene alone kills cotton fires—penetrates cotton bales and piles swiftly---wraps a dense, heavy blanket of Pyrene gas around them that shuts off the air fire needs to feed upon.

Pyrene won't damage cards, card clothing, or other delicate machinery of the cotton mill.

The foremost cotton mills, gin houses, and cotton seed oil mills use Pyrene.

800,000 Pyrenes are now in use.

Write for interesting booklet

Sold by auto supply and hardware dealers

Pyrene Manufacturing Company

52 Vanderbilt Avenue, New York City

Makers of Co nplete Fire Department and Fire Protection Equipment

T. J. RUSH has resigned as superintendent of the Villa Rica (Ga.) Cotton Oil Co.

RILEY DANIELS, master mechanic at the Burgess Mill, Pawtucket, R. I., has resigned his position to accept another with a large glass concern in Columbus, Ohio.

R. E. Carle has resigned his position as master mechanic with the Warren Cotton Mills, Warren, R. I., to accept a similar one in Woonsocket.

P. S. MCCUNE has resigned as overhauler at the Canton (Ga.) Mills, to become overseer of weaving, spooling, warping and slashing at the Harmony Grove Mills, Commerce, Ga.

T. J. DIGBY, JR., has resigned as overseer of weaving at the Social Circle (Ga.) Cotton Mills, to accept a similar position at the Walton Mills, Monroe, Ga.

R. R. MCGRAW has resigned as overseer of weaving at the Walton Mills, Monroe, Ga., to accept a similar position at the Social Circle (Ga.) Cotton Mills.

P. SPARKS has resigned as overseer of carding at the LaGrange (Ga.) Mills, to accept a similar position at the Fairfax (Ala.) Mills.

W. T. WILLIS has been promoted from second hand to overseer of carding at the LaGrange (Ga.) Cotton Mills.

ERNEST LANGLEY has resigned as engineer and master mechanic at the Manetta Mill, Lando, S. C.

J. W. BRINKLEY has been promoted to night overseer of carding at the Selma (Ala.) Mfg. Co.

W. C. WALTERS has resigned his position at the Anna Cotton Mills, Kings Mountain, N. C., to become overseer of spinning at the Buffalo Mills, Stubbs, N. C.

GEORGE E. ELLIOTT has gone to Norwich, Conn., as overseer of ring spinning in the Shetucket Mills. Previously Mr. Elliott was overseer of ring spinning in the Androscogging Mills, Lewiston, Me., for several years.

JNO. H. STEVENS has resigned his position at the Lang Mfg. Co., Lanett, Ala., to become overseer of carding at the Montala Mills, Montgomery, Ala.

P. C. GILLISPIE, of the Merrimack Mills, Huntsville, Ala., has accepted the position of overseer of weaving at the Sylvan Cotton Mills, Shelbyville, Tenn.

A. H. GOODMAN has resigned as overseer of carding at the Hermitage Mills, Camden, S. C., and accepted a similar position at the Glencoe Mills, Columbia, S. C.

ARTHUR M. YOUNG, of the Florence Mills, Forest City, N. C., has accepted the position of overseer of spinning at the Nokomis Mills, Lexington, N. C.

C. R. LOCKMAN, of Gastonia, N. C., has accepted the position of overseer of spinning at the Jewel Cotton Mill, Thomasville, N. C.

JAMES AIREY, of Elberton, Ga., is now overseer of weaving, slashing and chain beaming at the Hamilton-Carhartt Mills, Rock Hill, S. C.

J. R. MCGOWAN, of Simpsonville, S. C., has accepted the position of master mechanic at the Woodside Mill, Greenville, S. C.

M. D. SWEENEY, who was formerly overseer of the napping department of the Beacon Mfg. Co., New Bedford, Mass., has taken charge of the napping at the Dominion Textile Co.'s mill in Montreal.

GEORGE H. NORTON has resigned his position as overseer of dyeing, bleaching and mercerizing at the New England Cotton Yarn Co., New Bedford, Mass.

JOHN H. POTTER, who has resigned his position as second hand at the Cornell Mills, Fall River, Mass., becomes overseer at the Greylock Mills, Williamstown, Mass.

J. B. DRIVER has resigned as superintendent of the Millen (Ga.) Mills, to become overseer of carding at the Hamilton-Carhartt Mills, Rock Hill, S. C.

Advertising Contest Letters.

(Continued from page 242)

9th—Makes for sanitary surroundings,

10th—Increases precision and accuracy,

11th—Induces better workmanship from employees.

To the man not prepared along these lines, I think this advertisement answers every question, and should number him with the satisfied users of this product.

(Signed) L. E. Anderson, Superintendent, Highland Park Manufacturing Company, Charlotte, N. C.

Contest Department of COTTON:

To my mind, the advertisement of the L. C. Smith & Bros. Typewriter Co., on page 48 of the January COTTON, is the best displayed for the month. My reasons for this opinion are as follows:

It takes space and big type to tell the prospective customer where he is wasting money. It states clearly and truly how to stop the waste by getting a higher efficiency from his office force, as unnecessary noise and efficiency cannot travel hand in hand.

It also tells how to stop the bugbear to clear thinking, (noise in the office) where clear thinking is essential.

These, and the excellent picture of the machine, and the concise manner in which they state its advantages over the noisier type of machine, make it, to my mind, an ideal advertisement.

(Signed) George Carrigan, Overseer Carding, Manhasset Manufacturing Co., Putnam, Conn.

Contest Department of COTTON:

The Stafford Loom Co., of Readville, Mass., have the most attractive advertisement contained in the January, 1916, issue of COTTON, in my opinion. I believe it the most attractive and best advertisement, because:

1st—Almost everyone reads a two-page advertisement,

2nd—The first word "Ideal" will attract a man of ideas,

3rd—The second word "automatic," indicates labor saving.

4th—In the second line two facts are stated that will cause a progressive man to read and will attract further attention,

6th—The sixth and seventh lines will prove suggestive to any up-to-date mill man, from president to overseer.

7th—In the eighth and ninth lines appears the words "Less waste and higher grades." What can be more attractive to an energetic mill man than better quality and increased product?

8th—In the tenth line appear the words, "wider range," followed by some interesting cost suggestions,

9th—The attractive appearance with the perfectly arranged wording will accomplish its purpose, and I believe, is a very good reason for calling this the most attractive and best advertisement in the issue.

(Signed) W. N. Williams, Superintendent, Lincoln & Laboratory Mills, South Side, N. C.

(Continued on page 258)

KNITTING SECTION

A MINIMUM OF LABOR

means a minimum of cost.

Hosiery knit on our modern machine requires no other operation than the closing of the toe. No rib knitting or transferring, no welting or cutting of the high splicing threads is necessary.

The machine starts up on the naked needles and drops off each stocking ready for the looper.

Do you realize the savings?

ESTABLISHED 1865.

Scott & Williams, Inc.

88 Pearl Street,
BOSTON

New York
366 Broadway

Utica
5 Blandina Street

MERCERIZED YARNS

Dyers—Bleachers—Gassers

Dyers of

Colors Fast to SUN and BLEACHING

ABERFOYLE
Manufacturing Company

CHESTER, PA.

402 Morris Building
PHILADELPHIA

CHICAGO
746 Insurance Exchange

Light up those dark corners

Mill efficiency is the goal that every superintendent and mill owner is striving for.

Why not transfer more of the daylight and sunlight from the outside to the interior of your building by the use of **Pastello Flat Oil Paint** and **Porcelain Enamel.**

Light up those dark corners and do away with the dirty and unsightly walls and ceilings. We are living in a sanitary age and people in all walks of life prefer the modern, up-to-date factory to the old dingy and unclean shop.

You will save from 15% to 30% on your lighting bills. The health of your employees will be improved, each man's output will be increased and it will be much easier to get and keep help.

Pastello Flat Oil Paint and **Porcelain Enamels** will positively **stay white** longer than **any** other WHITE made. These are linseed oil paints and therefore will retain their high gloss no matter how often washed. We are ready to stand a test alongside of **any** similar product on the market.

Write for our "Light Without Power" booklet; it contains many interesting paint facts.

Upco QUALITY
Since 1881

The Ullman-Philpott Co.

Industrial Paint and Varnish Manufacturers

Cleveland, Ohio

Southern Knitters Meet at Charlotte

The first sectional meeting of knitters ever held in the South made its headquarters at the Selwyn Hotel, Charlotte, N. C., on Friday, Feb. 4th. While it was under the auspices of the National Association of Hosiery and Underwear Manufacturers, the officers of that association made no effort to direct the trend of the meeting, making it plain from the beginning that they wished the local and sectional delegates to take the lead in thought and expression.

President P. C. Withers, of the National Association, presided and there were numerous comments on the able manner in which he conducted the meeting. So successful was this first Southern meeting that it will doubtless be repeated annually.

Although the meeting was non-committal on the subject of protective tariff, it was evident that the South is disposed to break away from its traditions. One manufacturer, who said he had been taught from infancy to oppose protection as a principle, reached the conclusion that an American dye industry is impracticable without tariff protection, and added: "I will surrender any objections I may have inherited against protection as a whole and lend my aid in an appeal that protection be given to the dye industry."

President Withers called the meeting to order and in an informal address said in part:

"We are in the birth section, the cradle, of our National Association. It was started in the South. You Southern men first made it possible to have a national organization by getting a Southern organization started. I congratulate you on your far-sightedness in seeing the necessity of organization, and I am sure that you have opened the eyes of the Eastern manufacturers to the benefits that can be derived from organization.

"We men in the West at that time were so few and so scattered that we never thought of organization; but we were mighty glad of the opportunity of getting in with the national organization. A few of us are charter members and have been members ever since; but now the Central West is becoming quite a large auxiliary part of the national organization.

"The first thing you must have is organization, if you are going to produce cooperation and the result of the two—organization and cooperation should, and will be efficiency; not necessarily one hundred per cent efficiency, that is impossible, but the two, working together, will produce a certain degree of efficiency—a great deal more efficiency than it is possible to get by each working as an individual.

"There is another idea that is now going from one end of the country to the other about which we hear a great deal—Preparedness. We intend to have at our national meeting in Philadelphia in May a day which will be known as "Industrial Preparedness Day." Without going into the details, you will understand just what we will have to talk about—not necessarily army preparedness, or navy preparedness—but industrial preparedness. I believe we are all beginning to realize that the basis of a substantial government, and the basis of a strong people as a government, is industrial preparedness. We must be prepared along industrial lines. It is not for us to try to decide how the navy or the army shall be enlarged, but it is a very important question for us, and one of the things that is in line with our organization, to have our say, and to form our ideas as to how we shall be prepared along industrial lines—not with the idea of fighting some one, but for the sake of economic prosperity.

"Your organization is your machine. It belongs to its members, and the good you get out of it depends upon how you will use that machine. I was in Philadelphia a few weeks ago when a telegram came from a member in Nashville, Tenn. He was out of caustic soda. He wanted an immediate delivery, and he wired the Association. That communication was turned over to a person in the office to get full information, and to wire back to this member full details as to when they could deliver, what quantity, and within what price. The member could not have secured equal information with less than forty telegrams.

"Matters are constantly coming up along legislative lines. We all practically stand together for the things that will benefit American industry and American manufacturers. As to how we see the details we may disagree, but if enough of us will get together along one line we can get the legislation we need in making our industry more successful.

"We were all afraid of the dyestuff situation, and were advocating a bleach-season of white hosiery. Now, the white situation is getting just as serious as the black situation. It is almost impossible to get the materials with which to bleach. Another thing is the shortage of knitting needles.

"There is something that might be said (I am not going to try to say it) along the line of fixed prices. You manufacture something that sells to the consumer for 15 cents, or 25 cents, and so on. The yarn man puts the price of his yarns up and the dye man puts the price of dyes up; but when we put up the price of our stockings or underwear to repay us for the extra cost of our materials the

jobber tells us we are out of the range of fixed prices, and our goods are off the market.

"Now, gentlemen, let us take up those things in which we are vitally interested. It is your meeting. Let's find out all we know, and all the other fellow knows while we are here."

DYESTUFFS.

Mr. Carr, of the Durham Hosiery Mills, was asked by Chairman Withers for light on the dyestuff situation. "We don't know much about it," said Mr. Carr. "We are managing to run full time, and have been, so far. We don't know whether luck will stay with us much longer or not. Personally, I feel that by the middle of March the present serious situation will be very much relieved. I was talking to some gentlemen last night who said they had some sulphur black, to have been delivered in November last, and they had gotten some this week, the first delivery. Last week I was told virtually the same thing by two other knitters, which shows the supply is now beginning to increase somewhat, else these shipments would not come. We use direct and sulphur black. We have enough to run from hand to mouth."

The following letter from a German correspondent, addressed to C. B. Carter, secretary of the National Association, was read by Charles Schoneman, of the Standard Machine Company:

"We beg to draw your attention to the fact, that for a large consumer of aniline colors, it will be necessary to contemplate very closely the advisability to purchase now for delivery after the war. As you are aware, all the most important starting materials for the making of aniline dyestuffs are very scarce, and to all appearances this scarcity of raw materials will continue for a long time yet after the war, with the consequence that prices for aniline colors will keep going up. Being ourselves makers of the most important intermediate products from which we make a large variety of aniline colors, we have been able to accumulate a certain amount of the most regular dyestuffs for cotton, wool, silks, etc., are willing to book orders now at fixed prices for delivery after war. The advantage to you would be that you need not be afraid of a further advance in prices and that shipment to you would be made from a German shipping port by the first available opportunity."

Commenting on the list of colors accompanying the letter, Chairman Withers said: "It looks as if the majority of the dyestuffs given in the list would be used in dyeing wool, and I do not think that many manufacturers in the South make woolen goods. I do not see a thing in it that would interest me. If any of you are interested, you are perfectly at liberty to look at this communication at any time."

Mr. Carr arose to inquire if any of the manufacturers were getting a higher price for tans than for black. "We are quoting 2½ cents per dozen extra for all excepting black, white, Palm Beach and gray," responded C. P. Rogers, of the Skyland Hosiery Company, "and we are getting the price."

J. H. Thomas regarded the situation as to tan very important and remarked that it is not possible to obtain developed tan at as low a price as is being paid for a number of other shades.

TARIFF ON DYES.

The reading of a paper by Henry Howard, vice-president of the Manufacturing Chemists' Society of the United States, which had been read at the third annual National Trade convention in New Orleans, January 27-29, extracts from which appear elsewhere, was followed by an animated discussion on the question of a tariff protection for a dyestuffs industry. "Is any one opposed to it?" asked Chairman Withers.

J. H. Wilson, of the Richmond Hosiery Mills, Chattanooga, Tenn., said: "I do not believe any one in the house is opposed to the establishment of the American dyeing industry. We have gotton, and I suppose every one else in the textile business has received requests that we support a measure that is to be presented before Congress for a protective tariff on dyestuffs. While I am heartily in favor of a tariff commission that can take these questions and study them and make an intelligent report on them, I do not think we ought to be called upon to support that measure blindly, without being given some figures as to the cost of making these various dyeing materials. These men who are asking for support should, I think, give us some figures showing why and how they need this protection; and, on the other hand, if they ask us to support them in that, I think they ought to support us in a tariff on hosiery, whereby we will be reimbursed for the additional amount that we have to pay for dyes."

"Do you believe in a protective tariff on hosiery?" he was asked.

Mr. Wilson replied: "I am noncommittal. You mentioned that we imported before the war something like 25,000 tons of dyestuffs. These men making dyestuffs must have seen the possibilities of profit—enough to encourage their going into the business. They certainly did not just take the chances of war, and the duration of war, in making the investment that they have in these enormous plants. I am heartily in favor of giving them every encouragement in this industry, but we should not be called upon to support that measure without having some definite figures of cost, and why they call upon us to support it."

A. L. Patterson, Albemarle, N. C.: "We would like to know what this thing is going to cost us. What will be the cost of protecting the dyestuff industry and having sufficient quantities of dye to manufacture goods for a short time. The estimated cost of 4½ cents on $100 worth of goods of course is very small, but I believe we ought to verify figures. If 4½ cents on $100 worth of goods will insure us plenty of dye for the next year, I do not believe we care how much the manufacturers make."

"Supposing we did have this tariff," said President Withers. "We are paying 60 cents a pound for a black that cost from 15 to 16 cents a pound before the war. If we had had a protective tariff the year before the war we might have paid 20 to 23 cents, possibly, a pound, and it would have given the manufacturer a chance to live. He would have had money invested in American manufacturing. In order to get that back in a year or eighteen months (and you nor any ane else is going to invest money unless you are going to get it back), the dye manufacturer has to put the price up to 60 cents a pound. It is simply because we did not have a protective tariff."

House Bill 702, providing for an ad valorem duty in addition to the present specific duty on dyestuffs, was submitted by John M. Given, in the hope that action might be had. As the meeting showed no disposition to go on record

as for or against the bill, the only speaker, F. P. Bacon, thought "we ought to be neutral."

When Chairman Withers called for the experiences of knitters in the matter of obtaining needles, Mr. Bacon said: "I believe we should have a little tariff on needles."

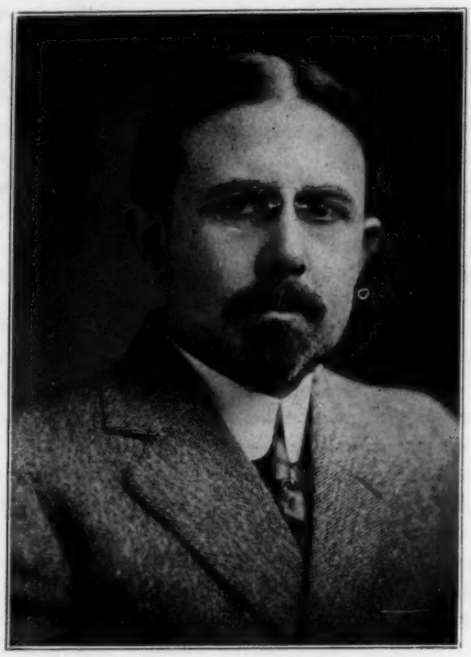
Chairman Withers undertook to bring out an explanation for the tremendous advance on mercerized yarn. "The price of cotton has everything to do with it, in the first place," said John M. Reynolds. "Furthermore, on account of the war we had to pay more for chemicals, as well as you people have. Very little yarn is being imported, which has made the demand for mercerized yarn more keen in the past six months."

By way of adding to Mr. Reynold's elucidation, Chairman Withers said: "There has been a tremendous advance in the price of caustic soda, and we know it is used in making mercerized yarns. Then mercerized yarns are taking the place of artificial silk and worm silk."

SPECIAL PACKING COSTS.

A desultory discussion on special packing called forth a presentation of the secretary of the Association's facilities for minimizing the annoyance and trouble incident to the fad. He said:

"Our association acts as a clearing house for all forms of special packing. You have two case orders: ordinarily, if you think you are going to get future business, you will order a thousand labels and bands. You may not have



SECRETARY C. B. CARTER.

another order. You have the surplus on hand. Under our system you order 60 dozen to a case. We send these to you by return mail, usually at a cost based on a thousand or ten thousand. We have the complete line of a great many jobbers; every label, band and box-top that they need. If we haven't we can get more prompt deliveries from the printer than the average knitter can; and where you have three or four bands from different sources, we draw all those labels in one office and make one shipment to you of just what you need."

The Keating-Owens Bill, providing federal regulations for the employment of juveniles under 16 years, and other things, was vigorously opposed. The discussion was opened by C. H. Bacon. "I am opposed to the bill," he said. "But if the bill is to be passed, it should be so amended as to exclude convict labor from competition."

David Clark, of Charlotte, gave it as his belief that there were three causes of the Keating-Owens Bill going through the House. "First," he said, "the labor unions. Dr. McKelway and the Child Labor Committee realized that the labor unions of this country would fight for an

PRESIDENT P. C. WITHERS.

eight-hour provision, and they realized that by putting the eight hours into this bill they could get the labor union vote behind the bill; and that is the reason of its going through the House as it did. Congressmen stated privately that they were opposed to the bill, knew it should not pass, but to vote against it meant political suicide; that the labor unions were in favor of it."

The meeting then adjourned its morning session and the delegates, repaired to the dining room in a body, where a special luncheon was served. A group photograph was made in front of the hotel and lobby discussions were held until the time for the afternoon session.

AFTERNOON SESSION.

When the meeting reconvened after the adjournment for luncheon, R. J. Walker, of the Berlin Aniline Works, was introduced. "We have had some men tell us," he said, "that if it were not for the dyes furnished them by us they would have to shut down. Some may criticise us for sending out large lists of dyestuffs that are offered us, but those dyes are offered to us from mills all over the Southern states. We probably have on our list twenty to thirty mills represented, whose goods are put into our hands to sell on a commission basis. One manufacturer said that he had no conscience in this matter; that they were charging him all they could for his dyes; that we should fix the price at what we thought right, and when we added what we

thought right he increased these prices from 50 cents to $2.50 per pound and said 'Go ahead and sell the goods.' So you see the situation.

"One man said: 'You had better cease sending out these lists, or some one will think you have lost your mind.' Another said, 'You are doing splendidly; keep it up. Continue to send us in your lists. We have a few thousand pounds of dyestuffs we want you to sell for us, and will send you samples in a few days. Get all you can for them."

Outspoken support of the bill for adequate protection for American dye industries, from purely patriotic motives, was voiced by W. T. Shaw, of the Weldon Cotton Manufacing Company, when the resolutions were submitted by the committee for consideration. Mr. Shaw in brushing aside his leanings toward tariff as a broad proposition, was vigorously applauded. He said:

"I have only a slight interest in dyestuffs. We of the South have been taught from infancy to oppose protection as a principle, but conditions bring about new situations, and as a patriotic business man, interested in the prosperity of the knit goods industry, and the fact that during the last forty years Yankee industry has been unable to put upon a sound basis a dye manufacture, leads me to the conclusion that it is impracticable without the tariff protection. I will surrender any objections I may have inherited against protection as a whole, and advocate the adoption of this resolution, and am perfectly willing to lend my aid to appeal to Congress that protection be given to it, and if in after years it be found that it can be self-supporting, we will let the future take care of itself. I think that some measure of protection is necessary to get this industry started in the United States."

The Committee on Resolutions reported the following, all of which were adopted as read:

Whereas, even under normal conditions many American industries have, in the past, been demoralized, and surplus goods of foreign manufacture have been sold in our market at less than the production cost; and

Whereas, the almost complete cessation of certain commodities, on account of the European war has forced the American manufacturers to invest millions of dollars in an effort to supply these deficiencies;

Therefore, be it resolved by the Southern knit goods manufacturers: That the Administration at Washington be earnestly requested to take immediate steps to formulate new laws, or amend old statutes, to prohibit the selling of foreign products in the American market at less than their market price prevailing in the country of their origin.

Whereas, the knit goods manufacturers of the Southern states are very seriously hurt by the operation of the blockade instigated by belligerents against the transportation from European countries to the United States and for consumption therein of non-contraband chemicals and dyestuffs; now, therefore, be it

Resolved, that it is the sense of this meeting that the President of the United States, the Secretary of State and all Senators and Congressmen be informed that this branch of the textile manufacturing trade looks to them for relief, by demand on the belligerent powers to permit free intercourse with this United States of the said non-contraband articles, and that pending a settlement of this demand the United States take such measures as will speedily bring this about.

Whereas, the American textile industry has suffered serious disadvantages, owing to the condition of the domestic dyestuff industry, under the circumstances brought about about by the present European War; and

Whereas, we feel this is (in part) due to the failure of our government to have in the past a just tariff on dyestuffs; therefore be it

Resolved, that this meeting of Southern knit goods manufacturers now assembled heartily endorse President Wilson in his proposal to establish a tariff commission and that said commission fix a tariff that it finds to be equitable, both to the textile manufacturer and to the life of the dyestuff industry.

Following up our endorsement of the Tariff Commission, and in view of the fact that there will probably be unforseen foreign competition in the knit goods industry at the close of the European war, be it further

Resolved, that we recommend that the tariff commission, immediately after its establishment, consider the present knit goods tariff with a view to making such amendments as the conditions then warrant.

Whereas, our National Congress is now considering a measure known as the Keating-Owens Bill (which is of special importance to the knit goods industry), be it

Resolved, that it be the sense of this convention that—

Whereas, we, the Southern knitters, are opposed to anything detrimental to the health of the childhood of the South; still, in view of the fact that the bill in question has been supported by the presentation of distorted facts concerning the true conditions of the child-labor in the South; and,

Whereas, it is being handled in a way to excite factional unfriendliness, be it

Resolved, that this particular bill is not a proper solution of the child labor question, or offered at a proper time or in a proper way.

Following the adoption of the resolutions, Guy H. Northcutt reverted to the federal child labor bill, and urged the knitting fraternity to back up the action taken by the meeting by personal effort. Mr. Clark, who previously had spoken on the measure, gave a warning that its passage would mean the introduction in Congress of bills calling for even more drastic legislation. He said:

"The bill is ostensibly to regulate child labor in the South, but really it is a labor union bill, to the effect that it may further the labor unions in this country, and following that will undoubtedly be two other bills: one to prohibit interstate shipment of goods unless made by union labor; another, to prohibit the manufacture of goods unless made by union labor and by the children of union laborers, of certain ages. Those two bills will follow in the next Congress."

The higher cost of paper boxes was referred to by W. T. Shaw as one of the items contributing to the necessity for price advances in knit goods. His mills are paying an advance of $10 per thousand boxes over last year's price. "I would like to ask," he said, "what the hosiery mills are going to do about it. As their contracts for boxes expire, they are going to be in the same situation as we are. Do they propose to substitute white boxes?"

President Withers said: "Mr. Shaw, I attended a meeting in New York, of the sub-association of the National Dry Goods Asociation, 'The Knit Goods Buyers,' where

there was quite a discussion on special boxing and labels and as to a proper amount to allow for special boxing. It was suggested that buyers ought to be allowed that average, and then, if something special were specified they ought to be willing to pay more. The great majority of buyers were in favor of such a resolution, but one or two were opposed to it, saying it was a matter of an individual business proposition between the buyer and the seller. As they could not make it unanimous, they withdrew the resolution.

"I believe that the special pack that the jobber or any one else demands is an individual proposition, between the buyer or the seller. If you are going to sell a man something and he wants something special, and you do not make him pay for it, that is your individual fault. I believe in discussing these things in the association, feeling that we can stiffen one another's backbone and stand more solidly for the principle that the man who does the buying ought to pay for what he buys."

The scarcity of knit goods and low price levels came up for discussion when inquiry was made by the secretary as to what steps manufacturers were taking for protection against strikes, dearth of dyes and cost of yarns. The secretary submitted the following forms, in use in several mills, for meeting unforseen conditions:

Owing to the fact that it is impossible to purchase dyestuffs except at prohibitive prices or to make binding contracts with responsible concerns for future deliveries, all orders placed with us for delivery after July 1 will be accepted subject to our ability to fill them without actual loss to ourselves.

This order subject to delay and contingencies of the dye situation.

The failure to obtain adequate prices, one member thought, was due to lack of confidence in the market and absence of knowledge as to what "the other fellow is getting. Mills generally get their information through their salesmen as to the wonderfully cheap prices the other fellow is getting," he said, "It seems to me as though we might publish the prices at which goods in each class are being sold. We are entitled to a uniform price. I do not know whether it would be within the law."

The President: "Make what they call an open market and all quote prices openly. Let every one know what your prices are. We have been trying to do it for years. It is done in some places. Some underwear men do it."

Pertinent to the price question the following telegram, which was received during the meeting from Garnett Andrews, the Richmond Hosiery Mills, Chattanooga, Tenn., was read:

"Hope you are having a nice meeting. Sorry I can't be with you. My best advice to everybody is to raise prices. Hosiery hasn't advanced quite 10 per cent. Raw materials, dyestuffs and other factors have advanced very much more, and we will have to advance labor very shortly. The retailers will have to learn to sell goods at 17 and 19 cents instead of 12½ and 15. Everybody is expecting to pay more for goods. Raise your sights. Have advanced four times since September, and soon will advance them again."

There was a lively debate between A. V. Victorious and E. L. Fields on the question of binding contracts, after which a rising vote of thanks and three rousing cheers were given to President Withers. The meeting then adjourned.

In the evening the delegates were entertained at a smoker by the Charlotte Chamber of Commerce.

The Knit Goods Market.

Hosiery prices continue to stiffen. The market is in better shape than for some months. The retail trade is taking merchandise more freely, and stocks in jobbers' hands are light. This latter situation is the result not alone of a better volume of business, but delayed deliveries.

Jobbers report that deliveries generally have been more satisfactory from mills which do their dyeing. Manufacturers who are dependent upon commercial dyers are reported as having great difficulty in meeting their contracts. An instance is cited of a mill sending 10,000 dozen in the gray to a dyer and getting returns of a case now and then.

Many dyers, it is alleged, are giving precedence to the work on which they obtain the higher prices, priority of delivery to the dyer playing a small part. Manufacturers willing to pay the dyer's price are making deliveries, but at a sacrifice of profit.

The jobbing trade, according to a leading Philadelphia distributor, realizes that mills are accepting prices ridiculously low in contrast with those of a year ago, when the changed conditions are taken into consideration. The eagerness of some mills for business is shown in the range of quotations. One mill recently quoted 97½ cents a dozen for 220 needle high spliced heel and double sole hosiery, 16 to 18 ounces per dozen. Quotations from other mills on the same number ran as high as $1.10.

It is estimated that taking hosiery as a whole, the advance since dyestuffs became scarce and cotton started upward, does not amount to 10 per cent. In fact, one large merchant reports having placed his order for fleeced cotton goods for fall at only a slight advance over fall, 1915. He is somewhat dubious, however, as to what he may have to pay for duplicates.

Mills are reported taking good care of their former customers. Jobbers crediting manufacturers with doing far better than was expected. A Southern mill is known to be making regular shipments of women's 1½ pound goods retailing at a dime, for which it easily could obtain 10 to 15 cents a dozen more.

There are mills, though, that are reported neglecting some of their contracts in taking care of export business, in which, it is understood, slightly better prices are obtainable on quantity orders. There is going to be a day of reckoning with these mills when mills abroad return to a normal basis of operation.

Fine cotton hosiery is in a position very satisfactory to manufacturers and jobbers. The demand for this class of goods has become more keen as fiber silk and worm silk prices have advanced.

Fiber silk hosiery as a quarter of a dollar retail proposition is off the market, so far as some jobbers are concerned. Several large houses which have substituted mercerized are well pleased with the results, and predict that if silk yarn prices continue to harden, mercerized goods to retail at 25 cents will be very popular. As if in anticipation of fulfillment of the prophesy, mills are marking prices of mercerized up to the highest level for years.

Jobbers are having a good market for women's stockings

with a 13 inch silk plaiated boot, going to the retailers at $2.35 to $2.40 a dozen, superseding the fiber silk boot. A popular line in half hose is of mercerized top, toe and heel and fiber silk ankle, put out as a 25 cent article.

Gradually, it is heard in the jobbing trade, retailers are discounting the fixed price policy, 27 to 29 cents appearing on the tags of what was until recently, quarter of a dollar merchandise. Fifteen cents straight is being obtained in many stores from which the two-for-a-quarter price tag has disappeared.

It is the opinion of not a few important factors that one result of the war is the development of hosiery manufacturing in this country to a stage where, after the war, foreign competition will be comparatively insignificant. One jobber said:

"We have foreign made fashioned goods, retailing at 25 and 50 cents, that we would not duplicate. The trade is showing a preference for domestic makes, except in very high priced French hosiery."

Another jobber says American mills are making better silk hosiery than ever was made abroad.

On the shelves of another large establishment was a lot of women's fashioned black lisle goods going to the jobber at $2.25. "You couldn't match that abroad, price, quality and finish considered," said the department manager

It is a common assertion in the trade that the United States is exporting better hosiery than ever was imported, that the war has transferred the hosiery center of the world from Chemnitz to this country as a permanency.

There is an easier feeling as to black—sulphur and direct, while most colors and shades are in diminishing quantity. Prices that seem prohibitive today will sound cheap 60 days hence, is the forecast of one dye and chemical house.

Deliveries of blacks are improving, although still unsatisfactory. New business in aniline oil is being taken at 60 cents a pound under term contracts. In second hands the price is around 95 cents to a dollar.

How to Figure Illumination.

The new edition, the sixth, of the complete little handbook "How to Figure Illumination" is ready for distribution. This booklet lists complete tables and full illuminating data as well as illustrating and describing with complete characteristics all the various sizes and styles of Mazda lamps. The information contained in this booklet, together with curves and illustrative matter is sufficiently complete to enable one to lay out any illumination plan. A copy of this booklet will be mailed, gratis, to anybody writing for it to the Western Electric Company at Chicago, New York, or any of their distributing houses throughout the United States.

Do you know all the different ways to lace belts? There are many styles of joint used for leather belts and some users prefer wire lacing while others prefer leather lacings. Still others prefer hooks. Under the heading, hints, kinks, and tables there is a fund of interesting information concerning the proper care of belting. This is contained in a booklet entitled "The Proper Care of Belts," which is being distributed gratis by the Joseph Dixon Crucible Company of Jersey Cty, N. J.

Among the Knitting Mills.

Southern manufacturers are invading the hosiery and knit goods field at a rapid rate, renewed impetus having seemingly been given this particular branch of manufacturing in recent months. New knitting mill enterprises are springing up on every hand throughout the Southern states. Elsewhere in this paper will be found a report of the recent meeting of the National Knitters Association held in Charlotte, N. C., on February 4th, which meeting has served to quicken the interest in hosiery and underwear manufacturers generally in this section.

Knitters interviewed at that time all seemed optimistic and reported business good in their line, with plenty of orders on hand. Some said, however, that it could not well be claimed that this prosperity is altogether well founded because a considerable measure of the present improvement is attributed directly or indirectly to war conditions prevailing across the water, and in the event of peace it would be difficult to foretell what amount of knit goods and hosiery manufacturing would cease, with its attendant cessation of employment for a large number of people.

BENJ. RUSSELL, President of the Russell Mfg. Co., Alexander City, Alabama, whose output is underwear and yarns, stated that they were extremely busy in their knit underwear plant at this time, and are sold ahead for quite a while, and with every indication that they will be very busy for the balance of the season.

W. T. COLE, Treasurer of Chatham & Louise Knitting Mills, Durham, N. C., says business is fine, as good as could be expected, especially when we consider the present situation in dyestuff lines. In talking to a representative of COTTON he continued: "I expect it to continue in this manner, for I feel sure that when the time comes we will have ample tariff protection on both the finished product and for the dyestuffs. I believe if given a little more time, the dye industry in this country will develop enough to take care of home demands. In the meantime the dye, as well as finished product, is sure to increase in price, for the twelve dye plants now in this country, can only manufacture about ⅖ of the amount used here, and that doesn't mean that ⅖ goes to the manufacturers of cotton products, because you can't help but notice that there are large amounts used in a dozen or so other industries. I don't think there will be any general movement toward the all white lines, because there is a demand, and a strong one for the dyed products, and where there is a strong demand there will be a source of supply found, at a price.

"It is true that the Southern manufacturer, as a rule, does not make as good a product, generally speaking, as the Northern manufacturer, but they are developing by leaps and bounds, and you can see this if you look back twenty years. We have the advantage in the South, through labor conditions and the raw product, and the South is the ideal manufacturing section of the United States. The Northern manufacturer can't compete on the same product with us. When we encroach on their lines they in turn encroach on the "Old Country." But we are making our respective products better every year and the time is coming when, with more skilled labor and more attention to details, we will be right there with them. At present the American manufacturer has got it all, not only at home, but in some of the foreign countries they have unlimited demands to supply.

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"HOSPITAL"

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ALL STEEL ECONOMY FIRE PROOF

FOR ALL PURPOSES

Largest Line in the U. S.

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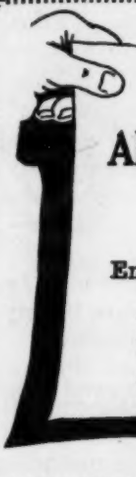

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Specialists in Cost Systems and Manufacturing Accounts.

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What Do You Want?

Doubtless many times during the year you want to purchase equipment or supplies and do not know just where the manufacturers are?

In such instances just drop a line to COTTON. We are always glad to give information or see that you get catalogs and prices on any product you want.

COTTON is always willing to be of service **and** welcomes such opportunities.

COTTON

ATLANTA, GA.

and they are going after it, to get it, and to keep it."

The Wendell Knitting Mills Co., at Wendell, N. C., would like to get in touch with manufacturers or dealers of knitting needles.

The Bowling, Emory Knitting Co., at Durham, N. C., have recently equipped with the necessary machinery for a complete hosiery mill. J. H. Emory is Secy., Treas., and Buyer.

The Elizabeth City Hosiery Co., at Elizabeth City, N. C., announce that they have solved the dye problem for this season. It is also stated that additional dyeing and finishing machinery has been bought and the output of finished goods is to be increased very considerably in the near future. About 225 employees are now at work and others will be added as soon as the demand calls for them.

The Melrose Knitting Mills at Raleigh, N. C., have recently changed the mill over to electric drive throughout. It is reported that they are planning to add some new machinery in the near future.

The Watkins Hosiery Mill at Raleigh, N. C., has been moved to Coates, N. C., where it will begin operation at an early date.

The Durham Hosiery Mill No. 3 at High Point, N. C., are operating at full time and report business good.

It is rumored that the North State Hosiery Mill at Durham, N. C., will increase its capacity as soon as the dye situation clears up.

The Carolina Hosiery Mills Co., at Winston-Salem, N. C., are doing a good business. It is reported that they are considering the installation of some new 220 needle machines at an early date.

J. G. Hanes, Treasurer of the Hanes Hosiery Mills, Winston-Salem, N. C., indicated it as his opinion that while dyestuffs are short, he believed the situation was getting easier, and he expected it to be worked out satisfactorily by the manufacturers of this country before very long. He reported business with his mill as good.

W. C. Pennington, who has just recently established a hosiery mill at Thomasville, N. C., now has the plant running in full, manufacturing hose and half-hose. The equipment consists of twenty Acme machines with Wildman ribbers.

The Crown Hosiery Mills at High Point, N. C., reports a good business. They have just completed the installation of a new oxidizing plant and other additional machinery in the dye house.

The Sellers Hosiery Mill at Burlington, N. C., have just built a new addition to the mill—75 x 150 feet, and have added thirty new knitting machines of Scott & Williams make. Business is reported to be good.

The Southern Hosiery Mills at Burlington, N. C., report business good. They have recently installed five Scott & Williams knitting machines, and ten more are to be installed at an early date, as well as one new looper.

The Daisy Hosiery Mill at Burlington, N. C., are receiving more orders than they can comfortably handle with present equipment, and it is rumored that they are thinking of increasing their capacity at an early date.

The Whitehead Hosiery Mills at Burlington, N. C., are doing a good business and are building a new dye house 80 x 140 feet. They expect to put in a chlorine gas bleaching process and Smith-Drum dyeing machinery, singers, etc. The plant when finished will have a capacity of 1400 dozen men's half hose per day.

The Gibsonville Hosiery Mill at Gibsonville, N. C., which has been shut down since September, 1914, has recently started up and is now running full time.

About $150,000 will be expended by the Davis Hosiery Mills, Chattanooga, Tenn., to enlarge the plant. W. H. Sears, of Chattanooga, is the architect, and the plans comprise a two-story 236 x 54-foot boarding-room; two-story 65 x 54-foot dyehouse addition; a 150 x 50-foot one-story dyehouse; a one and two-story 250 foot addition to the knitting mill, containing the packing room and shipping room; and a one-story addition to the office.

It is reported that an addition to the plant of the Avalon Knit Wear Company, Utica, N. Y., will be built and that the company is issuing $45,000 worth of new stock for the purpose. The mill will be four stories, 90 x 84 feet. Women's and children's ribbed underwear, mesh underwear and union suits, sweaters and coats are manufactured with a present equipment of 25 spring needle and 225 latch needle knitting machines, 12 ribbers and 425 sewing machines.

It is reported that the Reginia Hosiery Mfg. Co., at Haw River, N. C., expect to change over their plant to electric drive in the near future. They have given up the finishing of their product and expect to sell in the gray only.

It is reported that the Lynchburg Hosiery Mills are considering the installation of additional machinery.

The Strongwear Hosiery Manufacturing Company, Philadelphia, Pa., has been incorporated with a capital stock of $50,000. Frederick J. Siebrecht is president. A plant will be operated on 84-needle half-hose.

The Linenwear Hosiery Company plant at Clifton Heights, Pa., damaged by fire recently, is busy on work necessary to put the plant in shape for future operations.

The Hayes Knitting Co., Oswego, N. Y., has purchased a lot on the corner of West Second and Schuyler streets, where a knitting mill is soon to be erected. The company contemplates putting up a two-story mill of concrete construction. Plant to be operated by both steam and electricity.

The Onalaska Woolen Manufacturing Company, La Crosse, Wis., has changed its name to the Badger Hosiery Company and increased the capital stock to $50,000.

The Quaker City Sweater Mills, Philadelphia, Pa., recently increased capital to $125,000 and enlarged the mill equipment to 91 circular and 50 flat knitting and 90 sewing machines.

The Parker Hosiery Mills, Frostburg, Md., will build an addition with basement storehouse and two upper floors for installation of knitting machinery. Its daily capacity will be increased 50 per cent.

A knitting mill with a plant to cost $50,000 is to be established in Spartanburg, S. C., at once, by H. W. Kirby, James P. Gossett, J. A. Hall and H. F. Young. J. E. Sirrine, of Greenville, S C., is the engineer in charge. Mr. Gossett is president and treasurer of the Williamston (S. C.) Mills, and the other men interested are experienced knit goods manufacturers.

H. M. Clary, of Bowersville, Georgia, has about perfected the organization of a company to build a knitting mill. The capital planned is $25,000, and hosiery is to be the product.

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A Permanent Fine Appearing Roof at Low Cost

CORTRIGHT Metal Shingles add the finishing touch of good taste to any building. Painted a harmonious red or green, they have much of the rich appearance of tile, and the durability of real, old-style tin.

These points are largely responsible for the widespread and growing use of Cortright Metal Shingles during the past 28 years.

Add to this the fact that they cost very much less than tile, slate, etc., and last indefinitely long, and you have strong reasons for finding out about Cortright Metal Shingles before you decide on your next roof.
Write for complete information. No obligation.

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50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES have been added to the "1912" Cloth Cutting, Folding and Winding Machine which **add at least 50 per cent to its value to YOU.**

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to **more and greater profits.**
THE ENORMOUS SAVINGS WILL INTEREST YOU.
Mail a card for complete information and prices.
When in need of special machinery, write us.

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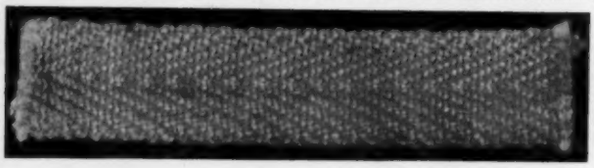

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Manufacturers of SPINDLE TAPES and BANDS

ALUMINA SOAPALITE
THE MINERAL SOAP

THE DETERGENT WITHOUT AN EQUAL

Washes thoroughly and quickly—rinses freely. Brightens and sets colors.

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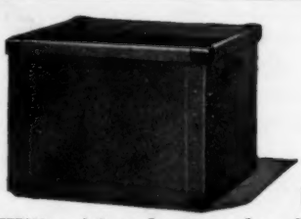

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MILL BASKETS
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Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel.
Write for Bulletin 12.

DIAMOND STATE FIBRE CO.
Bridgeport, Pa. **Elsmere, Del.**
Branches in Principal Cities.
Southern Agents:—E. S. Myers, 905 4th National Bank Bldg., Atlanta, Ga.; Pearson & Ramsaur, Greenville, S. C.

Two new knitting machines are being installed in the plant of the Henderson Mfg. Co., Hampton, Georgia. This company has been in existence for about fifteen years, but was recently incorporated with a capital stock of $200,000. Their product is ladies' cotton ribbed underwear.

The Richmond Hosiery Mills, Rossville, Ga., near Chattanooga, will build new branch plant at Soddy, Tenn., and has let contracts.

The Grantville Hosiery Mills, Grantville, Ga., has recently purchased additional machinery, sufficient to almost double their yarn mill. Their product is 5's to 20's colored hosiery yarns.

It is rumored that a new 5000 spindle mill will be erected by the Loudon Hosiery Mills, Loudon, Tenn., the new mill to spin the yarn used in their product of women's seamless and children's cotton hosiery.

The Williamsburg (Va.) Knitting Mills has been organized with officers as follows: W. A. Bozarth, president; Geo. P. Colman, vice-president; C. M. Hall, secretary-treasurer. This company has purchased the mill of the Williamsburg Knitting Co., with 3120 spindles and 100 knitters. Daily capacity 100 dozen cotton sweaters and 100 dozen underwear. T. S. Griffin is superintendent and buyer.

Improvement work has been started on the old Clark Cotton Mill, at Jonesboro, N. C., getting it in readiness to be used as a knitting mill.

The Jonesboro, (Ga.) Mfg. Co., expect to start operating their mill at an early date. Men's hosiery will be the output.

An automatic sprinkler system to cost $3,500 has been contracted for by the Belleville Hosiery Mills, at Belleville, Ill., manufacturers of mercerized silk half hose and hosiery.

A 2-story mill is being erected by the McLaren Knitting Co., at West Sand Lake, N. Y., manufacturers of men's shirts, sweater coats, etc.

It is reported that James Campbell intends to start a knitting mill at Bovill, Ida., and is installing spindles and preparatory machinery.

Advertising Contest Letters.

(Continued from page 246)

Contest Department of COTTON:

The L. C. Smith & Bros., Typewriter Co., of Syracuse, N. Y., has, in my opinion, the best and most attractive page of advertising in the January issue of COTTON, for which I will try to give my reasons.

The first "catchable" feature is the head lines, "You are paying for the noise in your office," which will catch any up-to-date manager or superintendent who is working on the efficiency plan. The words, "You are paying for noise," will at once catch his eye and he will carefully read the advertisement, for every manager or superintendent who is striving to give the firm who employs him as near 100 per cent efficiency as he has in him, is all the time trying to find where he is paying out something for "noise" which produces nothing.

The next catching feature is, "Noise is expensive," which is true with all machines. Stop the noise and everything runs smoothly and more efficiency is secured at a cheaper cost.

The next catching feature is, "You are paying the bill." That puts the "bill" squarely up to the man reading the advertisement and puts him to thinking. There's no better way to put him to thinking than to put his expense bill before his eyes, which the advertisement does.

The quietness it represents is essential with the clerical force. The fifth and sixth lines prove why it is essential to keep quietness, and the seventh and eighth lines tell you what makes the noise.

Next, it gives you the remedy to overcome the useless feature—the noise.

Then comes a clean, clear cut of a photographic view of the article advertised, which speaks loudly for itself. In fact, the advertisement speaks for itself most all the way down the page, and I think one big feature of the advertisement is having a full page space, which is more likely to be noticed.

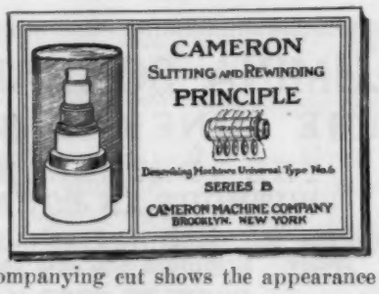
(Signed) J. A. Sorrells, Overseer of Carding, Pacolet Manufacturing Co., New Holland, Ga.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

HOW TO FIGURE OUT AND ARRANGE FOR PATTERN WORK FOR WEAVING COLORED FABRICS. By J. G. King, Superintendent, Elmira Cotton Mills Co., Burlington, N. C. 71 pages. Numerous illustrations. Published by the author. Price $1.25.

The object of this book is to fill a demand for textile books that shall have all calculations just as plain and simple as possible. By keeping this object in view, a book has been produced whereby the uneducated man will be enabled to figure out and arrange pattern work on colored goods to the best advantage. A special effort has been made in this book to avoid all signs and abbreviations and so simplified that anyone with a slight knowledge of arithmetic can understand and utilize the information contained within its covers. Not only does the book treat on pattern preparation, but it considers the percentage of sizing for warps; how much cloth will "take up" in weaving; rules for figuring the weight of the goods before it is woven; rules for finding the weight of the warp and length and number of yarns; rules on figuring the percentage of production; and many other similar practical propositions for the man actually in charge of cotton mills or departments therein.



The acompanying cut shows the appearance of the new catalogue of the Cameron Machine Co., Brooklyn, N. Y. This catalogue describes the Cameron principle for slitting and rewinding all kinds of fabrics. The universal type No. 6 machine is fully described, and the entire 53 pages of the catalogue are full of interesting illustrations and descriptive matter.